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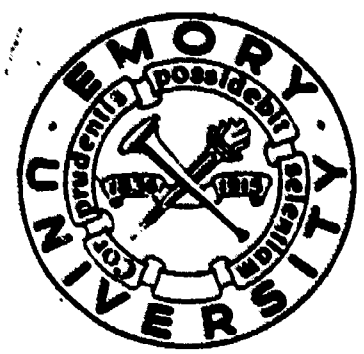
ABSTRACT

This study concerns career choices and patterns of men and women who chose the fields of science, mathematics or teaching as an occupation. The data for the study came from the Project TALENT Data Bank and include students from grades 9, 10, 11, and 12 during the 1960 school year when the initial data were collected. The first two chapters present an analysis of the factors which influence career choice and the relationship of these variables to different career groups. Twenty-two predictor variables are related to occupational grouping and the differences among these variables are examined. The remaining three chapters present the career pattern data for selected occupational groups, following career decisions from high school through a one-year follow-up; five-year follow-up; and for the twelfth-grade students, an eleven-year follow-up. Three different ways of examining the data are presented: Chapter Three presents the total raw data by grade, sex and occupational group; Chapter Four is an examination of career group composition; and Chapter Five uses a follow forward technique to examine career stability. (Author/BR)



DIVISION OF EDUCATIONAL STUDIES

A STUDY OF CAREERS IN SCIENCE, MATHEMATICS AND TEACHING

by

Eugene C. Lee
Emory University
January, 1975

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A B S T R A C T

This is a study of career choices and career patterns of men and women who chose the fields of science, mathematics or teaching as their occupation. The data for the study come from the Project TALENT Data Bank. The study includes students from grades 9, 10, 11 and 12 during the 1960 school year when the initial Project TALENT data was collected.

For males the following career categories were included:

1. Mathematician
2. Physical Scientist
3. Biologist
4. Engineer
5. Math Teacher
6. Science Teacher
7. Other Secondary Teacher.

For females the following career categories were included:

1. Scientist
2. Elementary Teacher
3. Math Teacher
4. Science Teacher.

The first two chapters present an analysis of the factors which influence career choice and the relationship of these variables to different career groups. Twenty-two predictor variables are related to occupational grouping and the differences among these variables are examined.

The remaining three chapters present the career pattern data for the selected occupational groups, following their career decisions from high school, through one-year follow-up, five-year follow-up, and, for the twelfth graders, eleven-year follow-up. Three different ways of examining

data are presented: Chapter Three presents the total raw data by grade, sex, and occupational group; Chapter Four is an examination of career group composition; and Chapter Five uses a follow forward technique to examine career stability.

Chapter 1

CAREER PATTERN RESEARCH

The field of career development is one which has fascinated researchers for a long time, and has been examined from many different points of view. Questions regarding the distributions of interest and talent throughout the American work force, leading to manpower studies and occupational predictions have consistently occupied government agencies and researchers. Psychologists and psychometrists have investigated the possibility of predicting career choice based on a variety of factors such as personality predispositions for certain career areas. Studies have been made at different periods during our history regarding the availability of certain kinds of manpower to meet predicted national needs. Other studies have been made of changing occupational requirements of our culture and how best to prepare our potential manpower pool to meet these predicted occupational demands. The field of occupational counseling is constantly concerned with attempting to relate individual interests and needs to available occupational fields. A variety of researchers from different backgrounds and interests have focused on the problem of establishing models of career choice and testing the predictability and stability of such models. Studies have been conducted on identifying and measuring the variables which impinge upon this model in an attempt to refine the model to achieve maximum understanding and predictability.

The research study to be reported on here is based on many of these previous studies, and hopefully will add to the cumulative evidence in the total field of career development. In order to give some perspective to this research report,

it would, perhaps, be helpful to trace briefly the history of this particular research study so that the reader might better understand the rationale behind the facts and figures as they are reported.

The genesis of this particular research began with a dual interest in science and in teaching. Having taught science in high school and observed good science teachers and poor science teachers, at least as seen through the eyes of this untrained observer, the question arose as to what made a <u>good</u> science teacher <u>good</u>. Not realizing at the time the complexity of such a question, and in a rather naive and simple-minded formulation, the idea was advanced that teaching is primarily a function of personality. All well and good; many people agreed with this; researchers, psychologists and philosophers had written much on this subject.

The next step was to formulate this idea into some kind of researchable terms. As often happens with such research, this is where the real problems began. The major problem was to define in measurable terms "good teaching," and to show the relationship between personality and this measure of teaching ability. This task proved unmanageable. After many hours of poring over research journals, and after many postulations and rejections, it was concluded that a direct attack on this problem was not possible within the framework of present research capabilities and measuring instruments.

After rejecting a direct attack on the problem of defining successful teaching, other possible avenues of research were considered. It was at this stage that the field of career development became of interest. The general theory of career development is concerned with the interaction of an individual's

personality with the total career development process. A body of theory was in the process of being developed which related personality to career plans and ultimate career choice. Research by Roe, Super, Cooley and others concerned itself with career development of scientists. Approaching the problem from differing points of view, they were all attempting to relate personality and personality development to the career choice process of scientists. The possibility became clear that the same kind of research techniques and methodology could be applied equally well to science teachers and that researchable hypotheses could be deduced from their general theoretical framework. This could lead to some generalizations about science teachers as a group in a particular occupational field. Hopefully, when definitive personality patterns associated with a group of science teachers were discovered and described, these attributes could then be related to their classroom behavior. But, as is usually the case, this first step proved to be more complex and time-consuming than was originally anticipated.

Pursuing the idea of career development research on science teachers, a study was begun at the Harvard Graduate School of Education during 1960-1961[1], in conjunction with the Scientific Career Study (a five-year study was conducted by W. W. Cooley under a grant from the U. S. Office of Education, 1958 through 1963)[2]. The strategy for this initiated research on science teachers based on a developmental scheme involving the career patterns of science teachers from their upper elementary education through their entrance into the career field. In essence, the model has three major postulates: (1) that an interest in science preceded an interest in teaching; (2) that the career development of science teachers will closely parallel that of scientists up to a branching or

a decision point reached prior to college graduation; and (3) the major difference exhibited by those choosing science teaching, rather than scientific careers, would be an orientation more toward people and personal involvement and less toward "things" and theoretical considerations. The ideas incorporated in this model are that (a) science teachers start out in life with an interest in, or an orientation toward becoming, some kind of practicing scientist and that (b) somewhere during their career, usually during the college phase of their formal education, they discover that they are more interested in working with people than they are in working in a laboratory and, hence, (c) turn toward science teaching as a method of satisfying both their interest in science and their interest in working with people.

The reason for choosing scientists as a comparison group was twofold. First, like the scientist, the science teacher in his career development pattern passes through a series of irreversible choice points. Since science and the supporting area of mathematics are essentially sequential, initial and subsequent choices as to course work and curriculum patterns are essentially irreversible. A student in high school, interested in a scientific career, must select a college preparatory curriculum and include in this as many science and math courses as possible; he must enter college with a science major and begin his work in the freshman and sophomore years in science and math courses. There are exceptions to this, or course, but the percentage of those who do not start out in science and who later choose to enter science and are willing to go back and take the prerequisite courses necessary to complete a science curriculum in college are a very small minority indeed. Thus, the pattern followed by the scientist and the science teacher is essentially parallel up to a point. Second,

there was a large body of information available on the careers of scientists and a considerable amount of research information on which comparisons with science teachers could be made.

The design of the study was to compare two groups of recent male college graduates, both science majors. One of these groups continued in science and the other group entered science teaching. The two groups were administered three tests: The Guilford-Zimmerman Temperament Survey, the Alport-Vernon-Lindsay Study of Values and the Strong Vocational Interest Blank. Prior to the analysis of the data, twelve hypotheses were formulated, predicting not only a difference on a variable between the two groups, but also the direction of that difference. In analyzing the data, when all twelve scales were examined in combination using a two-group discriminant analysis, the difference between the two groups was significant beyond the .001 level. When the scales were examined individually, it was found that the groups differed significantly on seven of the twelve scales in the directions predicted. The other five scales showed no significant differences (see Table I-1, page 6).

An examination of the individual scales on which a significant difference did exist confirmed the hypothesis of people-oriented teachers versus non-people-oriented scientists. The science teacher group scored higher on all scales involving interpersonal relations. Another satisfying aspect of the results was that approximately 39 percent of the variance in the choice process was explainable in terms of the personality factors studied. This substantiated the hypothesis that personality exerts a considerable influence on the career choice process and that by examining and researching occupational groups that

TABLE I-1

Individual Variable Analysis: A Summary of the Analyses Performed on the Twelve Individual Variables with the Prediction and Outcome of that Prediction

Area variable	Prediction	t	p	High group	Outcome of prediction
Temperament					
Sociability	SCS < LAST	2.373	.01	ST*	Correct
Emotional stability	SCS < LAST	2.589	.01	ST	Correct
Objectivity	SCS < LAST	1.657	.025 < p < .05	ST	Correct
Personal relation	SCS < LAST	2.013	.01 < p < .025	ST	Correct
Values					
Theoretical	SCS > LAST	1.174	Not significant	S**	No difference
Aesthetic	SCS < LAST	0.825	Not significant	S	No difference
Social	SCS < LAST	3.865	.0005	ST	Correct
Interests					
Technical worker	SCS > LAST	3.946	.0005	S	Correct
Welfare worker	SCS < LAST	6.379	.0005	ST	Correct
Musical performer	SCS > LAST	0.720	Not significant	ST	No difference
Business detail	SCS < LAST	0.748	Not significant	S	No difference
Business contact	SCS < LAST	0.454	Not significant	ST	No difference

* ST = Science Teachers

** S = Scientist

fairly stable personality syndromes associated with these occupational groups might be established. The details of this study may be found in Lee, 1963[3].

While the size of the sample in the original study was relatively small (N = 127), subsequent studies have supported the replicability of the results. A study by Theissen[4] was a replication of the original sample from a different geographical section of the country. Following the same procedures and analysis as performed in the original study, the results of the Theissen study were almost a duplicate of the original. There were small, non-significant differences between the two samples of science teachers. The differences between the science teachers and the scientists were again significant. The same variables were found to be significant in separating the scientists and the science teacher groups. Further studies by other researchers produced findings which closely parallel the original hypotheses. A study by Bledsoe and Morris[5] focused on further defining the science teacher group and their findings closely paralleled the studies by Theissen and by Lee. Further studies by Charles M. Weller[6] and by Herbert J. Walberg and Wayne W. Welch[7], and by Jacob W. Blankenship[8] have all been concerned essentially with the problem of science teacher personality and related variables.

Expanding the Research Pool - Project TALENT

The original purpose in adopting the framework of career development for studying science teacher personality was justified by the results of the initial study by Lee and others which followed. There were some restrictions, however, which limited the generalization of the findings and made it desirable to push

for further investigations which would validate or modify the theoretical model used in the original study and would expand the size of the sample both in terms of numbers and in terms of occupational groups. The original study had included only two groups, scientists and science teachers. There was still some question as to the relationship between science teachers and other teachers and among the different specialities within the sciences, such as physicists, biologists, engineers, mathematicians, etc.

Another limiting factor in the design was that the original study was done only on males. There were three reasons for this discrimination: (1) more males enter science and science teaching than females; (2) male career patterns were thought to be more stable than female career patterns; (3) much of the comparison data available was limited to male scientific careers. Also, there was the question of regional bias in the geographical limitations of the original study since the initial study included samples limited to the northeastern section of the country.

At first this task appeared quite formidable. Various schemes were concerted for testing college freshmen on some kind of sampling basis at various colleges and universities throughout the United States, but the financial and time considerations involved in such a proposal were staggering. It was at this time that a fortuitous event took place, in that W. W. Cooley, who had been the faculty advisor of the original research, became Director of Project TALENT. Dr. Cooley suggested that utilizing Project TALENT data could help overcome many of the limitations of the previous studies. Project TALENT included in its original testing sample 440,000 high school students tested during the school year 1960.

These included students in grades 10, 11 and 12, and the 9th graders in junior high schools which were clearly associated with the senior high schools that had been selected for the study. The goals of Project TALENT were (1) to develop an inventory of human resources; (2) to develop a set of standards for educational and psychological measurement; (3) to prepare a comprehensive counseling guide indicating patterns of aptitudes and abilities which were predictive of success and satisfaction in various careers; and (4) to provide a better understanding of educational experiences which prepare students for their life's work[9]. The 1960 testing program included approximately five percent of the high schools in the country, over 400,000 students in grades nine through twelve attending randomly selected schools were administered two days of psychological tests and inventories especially constructed for this project. Included in the battery were measures of specialized aptitudes, general ability, interest and temperament information, student home background, and plans for the future. All of this information was scored, and stored on computer tape for future use. In addition to this original testing, there was a planned follow-up design covering a twenty-year span. This follow-up design provided for contacting as many as possible of the original 400,000 students on a one-year, five-year, ten-year and twenty-year schedule after each of the four classes was expected to be graduated from high school. As of the date of this writing one-year and five-year follow-ups have been completed on all four grade levels, 9, 10, 11, and 12, and the eleven-year follow-up data is available on the 12th grade high school graduating class of 1960.

A more complete description of the original test data and the follow-up procedures may be obtained in Project TALENT Data Bank: a Handbook, American Institute for Research, Palo Alto, California, April, 1972[10].

It became readily obvious that through the use of Project TALENT data the kind of study envisioned could be accomplished during a relatively short period of time and a study using Project TALENT data could overcome many of the limitations of the original study. It was possible with the occupational codings used by Project TALENT to identify specific occupational groups within the science category. These were mathematicians, physical scientists, biologists and engineers, and to separate science teachers, mathematics teachers and other secondary teachers. Also by utilizing Project TALENT data, limitations of sample size and geographical bias were overcome. In addition, the research was expanded to include female career patterns as well as male career patterns.

The One-Year Study

The first study of science teachers utilizing Project TALENT data was performed on the high school graduating class of 1960, using the one-year follow-up data with occupational goals as stated by college freshmen one year out of high school. A complete battery of test data was available in the Project TALENT data bank for the students. One of the objectives of this study was to examine additional career groups other than just scientist and science teachers. Comparisons were desired on related occupations and on differing careers within the sciences. For these reasons the following career groups were selected for inclusion:

1. Mathematicians
2. Physical Scientist
3. Biologist
4. Engineers
5. Mathematics Teachers (secondary)
6. Science Teachers (secondary)
7. Secondary Teachers (other than science or mathematics)

From among the vast array of data available on the students who had these stated career goals, sixteen scales were selected on which to perform the analysis. These sixteen scales were:

1. Mathematics Information
2. Physical Science Information
3. Biological Science Information
4. Creativity
5. Mechanical Reasoning
6. Abstract Reasoning
7. Mathematics I
8. Mathematics II
9. Mathematics III
10. Sociability
11. Social Sensitivity
12. Physical Science Interest
13. Biological Science Interest
14. Public Service Interest
15. Social Service
16. Sales Interest

A description of these scales and the rationale for their inclusion may be found in Lee and Cooley[12].

A seven-group sixteen variable discriminate analysis was performed and the results are shown in Tables I-2 for males and I-3 for females. As can be seen from these tables the results were similar to those found in the original study. The scales which showed the most discriminating power were the interest scales and the information scales which have a high interest component. There were some differences between male and female scores and these were explored in the article by Lee and Cooley cited above.

The Present Study

As was stated earlier, the first study using Project TALENT data was conducted on the high school graduating class of 1960, one year after graduation from high school, and the occupational groupings were based on stated occupational goals as college freshmen. The true test, of course, would come with the longitudinal follow-up data for all four grade levels over a period of years.

TABLE I-2

Means for the Seven Male Career Plan Groups (N = 851)

	Mathematician	Physical scientist	Biologist	Engineer	Math teacher	Science teacher	Secondary teacher	F-ratios	S.D.'s
1. Math information	20.12	19.36	14.61	17.37	17.88	16.58	14.59	26.33*	4.67
2. Physical science information	14.84	16.15	13.41	13.92	13.41	14.33	12.82	19.30*	3.39
3. Biological science information	7.99	9.05	8.23	8.12	7.72	8.50	7.82	9.87*	1.87
4. Creativity	12.88	13.64	11.05	12.47	11.31	12.04	11.81	6.52*	4.00
5. Mechanical reasoning	15.93	16.42	14.41	16.02	14.82	14.38	14.28	8.90*	3.51
6. Abstract reasoning	12.07	11.74	10.43	11.62	11.12	11.02	10.43	9.00*	2.34
7. Math I	13.59	12.95	10.88	12.35	12.76	11.37	11.25	12.47*	2.95
8. Math II	20.08	19.70	14.77	18.04	18.92	16.27	14.93	28.07*	4.76
9. Math III	9.53	8.88	5.95	7.71	8.10	6.63	5.79	24.55*	3.34
10. Sociability	6.25	6.02	6.46	6.27	6.72	6.23	6.86	1.28	3.10
11. Social sensitivity	4.46	4.95	4.45	4.75	4.69	5.42	5.22	2.08	2.37
12. Physical science interest	46.40	47.83	37.11	46.24	43.21	43.13	33.58	36.98*	11.19
13. Biological science interest	17.58	19.21	20.48	17.75	17.53	21.63	16.66	6.91*	6.26
14. Public service	23.87	21.94	19.32	22.66	22.10	25.46	22.71	1.60	11.78
15. Social service	21.66	20.57	19.43	19.88	27.61	28.31	27.38	32.92*	7.89
16. Sales	10.45	8.82	8.59	9.88	10.34	9.94	10.77	3.45*	4.89
N	113	206	56	196	90	52	138		

*F > 2.80 at 0.01.

TABLE I-3

Means for the Six Female Career Plan Groups (N = 512)

	Mathema-tician	Physical scientist	Biologist	Math teacher	Science teacher	Secondary teacher	F-ratios	S.D.'s
1. Math information	19.13	19.25	19.00	19.15	16.22	13.73	32.22*	5.18
2. Physical science information	13.67	14.34	14.48	12.50	13.36	10.93	15.21*	3.78
3. Biological science information	7.85	8.24	9.00	7.20	8.10	7.42	5.57*	2.10
4. Creativity	12.37	12.60	14.22	12.57	12.95	11.28	5.64*	3.57
5. Mechanical reasoning	13.67	13.31	13.52	13.35	12.83	10.97	11.07*	3.72
6. Abstract reasoning	12.15	11.99	11.89	12.03	11.15	10.77	8.26*	2.19
7. Math I	13.29	13.16	13.15	13.38	12.36	11.12	13.68*	2.94
8. Math II	20.52	19.93	19.26	20.11	17.93	15.22	31.24*	4.69
9. Math III	8.85	7.99	8.26	8.67	6.80	5.17	31.26*	3.23
10. Sociability	6.65	4.96	5.89	6.98	6.14	6.43	3.84*	3.15
11. Social sensitivity	5.77	5.19	5.93	5.78	5.80	5.50	1.79*	2.43
12. Physical science interest	41.37	42.49	37.78	36.30	36.58	25.67	35.45*	13.19
13. Biological science interest	17.37	20.04	25.00	17.50	23.80	16.95	15.49*	7.26
14. Public service	19.27	18.37	17.15	18.10	16.85	20.40	1.05*	12.94
15. Social service	28.35	27.36	28.26	33.13	34.00	32.87	10.67*	7.80
16. Sales	9.06	7.21	6.93	9.41	7.81	9.56	3.65*	5.20
N	52	67	27	102	59	205		

*F > 3.02 at 0.01.

Present Research

In the spring of 1973 data was available from Project TALENT on grades 9, 10, 11, and 12, males and females, which included their stated high school career plans, their one-year follow-up plans, their five-year follow-up data, and the eleven-year follow-up data on grade 12. See Table I-4 for a graphic presentation of the data used for this study. As can be seen by looking at Table I-4, data was available on both males and females for all four grades which included their stated career goals at that grade level in high school, one year out of high school, and five years out of high school, and for the twelfth graders, eleven years out of high school. Note, however, that each follow-up study was one year longer than the follow-up study preceding it. That is, for the ninth graders, the one-year follow-up study occurred four years after their stated career plans as of 1960 and the five-year follow-up study for ninth graders occurred eight years after their 1960 stated career plans. This differentiation in delayed follow-up time will be discussed later in the consideration of the overall trends of the data for the four grade levels.

Two major and different types of research are undertaken utilizing the data available from Project TALENT. One focus of the research was an effort to further validate previous research on personality characteristics as related to career choice. This was accomplished by using the 12th grade data on both males and females involving their stated high school career plans, one-year follow-up plans and their five-year occupational career choice as related to antecedent data which had been gathered in original 1960 testing program. The results of this study relating personality factors and career choice are presented in

Chapter 2. The second approach was to chart the career choice indications of the individuals as they moved from high school plans, to one-year follow-up to five-year follow-up, to eleven-year follow-up. Part of the Project TALENT data bank includes for each individual a career code from the original testing and for each step in the follow-up data. By use of these career codes, it is possible to follow the actual career patterns of individuals and their movement into and out of different career groups. The procedure was to identify from the Project TALENT data bank all those individuals who had indicated an interest in any one of the career groups under study, at any one of the four stages where data was available. A more complete description of this data and how it is organized is presented in Chapter 3.

Organization of this Report

Following the discussion of personality factors related to career choice and the data organizations on occupational careers, each career group will be reported on individually. For males, these include the career groups of mathematicians, physical scientists, biologists, engineers, mathematics teachers, science teachers, and other secondary teachers. For females the grouping is somewhat different since there were not enough in each individual science category, the science groups were collapsed into one category called scientist. Therefore, for females there are career groups of scientists, elementary teacher, secondary mathematics teacher and secondary science teacher. Elementary school teaching was added as an occupational group because this is one of the more common career patterns for females. In addition, for the 12th graders, data was available on their eleven-year follow-up and included in the eleven-year follow-up data analysis was the occupational group of college teaching.

TABLF I-4

Project TALENT Follow-Up Surveys and Schedule

Grade When Tested in 1960	Years for Follow-Up Studies			
	1-Year Follow-Up	5-Year Follow-Up	11-Year Follow-Up	20-Year Follow-Up
12	1961	1965	1971	1980
11	1962	1966	1972	1981
10	1963	1967	1973	1982
9	1964	1968	1974	1983

FOOTNOTES

1. Career Development of Science Teachers, Journal of Research in Science Teaching, I, March, 1963, 54-63.

2. Cooley, W. W., "Career Development of Scientists: An Overlapping - Longitudinal Study," Harvard University, Cambridge, Massachusetts, 1963, CPR No. 436.

3. See 1. above.

4. "Career Development of Science Teachers: A continuing Study of Personality Determinants," unpublished Masters Thesis, University of Chicago, 1964 .

5. "A Comparative Study of Selected Needs, Values and Motives of Science and Non-Science Teachers," Journal of Research in Science Teaching, II, 123-131, June, 1964.

6. "The Orientation of the Secondary School Science Teacher," unpublished thesis, Harvard Graduate School of Education, 1965.

7. "Dimensions of Personality in Selected Physics Teachers," unpublished paper, Harvard Project Physics, Harvard Graduate School of Education, 1967.

8. "Biology Teachers and Their Attitudes Concerning BSCS," Journal of Research in Science Teaching, III, March, 1965, 54-60.

9. Footnote from Project TALENT One-Year Follow-up Studies Cooperative Research Project No. 233, John C. Flannagan, principal investigator, William Cooley, Project Director, School of Education, University of Pittsburgh, 1966.

10. Design for a Study of American Youth, Project TALENT, American Institute for Research, 1962, Houghtin Mifflin Company, Boston.

11. Design for a Study of American Youth, Project TALENT, American Institute Research, 1962, Houghtin Mifflin Company, Boston.

12. "Career Development of Science Teachers: A Cooperative Study with Project TALENT," Journal of Research in Science Teaching, III, pp. 300-306.

Chapter II

PERSONALITY FACTORS RELATED TO CAREER CHOICES

As was described in Chapter I, the first study using Project TALENT data was conducted on the high school graduating class of 1960, one year after graduation from high school and the occupational groupings used as criterion groups were based on stated occupational goals as college freshmen. The real test, of course, would come with the five-year follow-up data for the same group of students when the criteria for inclusion in occupational grouping would be actual entrance into the work field. The data for the five-year follow-up study was gathered during the school year 1965-1966 and was made available through the Project TALENT data bank in the fall of 1966. A study was designed similar to the one utilizing the one-year follow-up data. The criteria used was whether the students had indicated on their five-year follow-up forms that they had actually entered one of the seven occupational groups selected for inclusion in the study. In the meantime, however, another development had occurred which had direct bearing on the research for the five-year follow-up study.

One of the problems encountered in the one-year follow-up study was the selection of appropriate scales from the vast array of data available in the original test battery for inclusion in the analyses. The scales selected were based on theoretical considerations and on previous experience with the functionality of certain scales in previous analyses. There were, however, limitations on the number of scales which could be used and there was the possibility that we were losing information that would have been valuable. This problem was overcome by the work of Paul R. Lohnes[1]. Lohnes took the original test battery and using

the techniques of factor analysis derived 22 factors or scales which contained the essential information of the original test battery. The 22 factors as derived by Lohnes are as follows:

1. Verbal Knowledge (VKN)
2. Perceptual Speed and Accuracy (PSA)
3. Mathematics (MAT)
4. Hunting-Fishing (H-F)
5. English Language (ENG)
6. Visual Reasoning (VIS)
7. Color-Foods (COL)
8. Etiquette (ETT)
9. Memory (MEM)
10. Screening (SCR)
11. Games (GAM)
12. Business Interests (BUS)
13. Conformity Needs (CON)
14. Scholasticism (SCH)
15. Outdoors-Shop Interest (OUT)
16. Cultural Interests (CUL)
17. Activity Level (ACT)
18. Impulsion (IMP)
19. Science Interest (SCI)
20. Sociability (SOC)
21. Leadership (LEA)
22. Introspection (INT)

A more complete description of these factors and the contents of the tests that contribute to each factor may be found in Lohnes. These 22 factors are divided into two major areas, Abilities Domain and Motives Domain. The factors included in the Abilities Domain are Verbal Knowledge, English Language, Visual Reasoning, Mathematics, Perceptual Speed and Accuracy, Screening, Hunting-Fishing, Memory, Color-Foods, Etiquette and Games. Factors included in the Motives Domain are Conformity Needs, Business Interest, Outdoors-Shop Interest, Activity Level, Leadership, Impulsion, Sociability, and Introspection. Grade and sex factor differences were handled separately. The 11 factors in each domain are mutually orthogonal (uncorrelated) for a given sex and high school grade. A way of

viewing the factors is given by Lohnes and Cooley[2]. Under the abilities factor, core educational achievements, are Verbal Knowledge, which is a "G" factor, Mathematics and English Language. Differential Aptitudes include Visual Reasoning, Perceptual Speed and Accuracy, and Memory. Under Specialized Knowledges, Hunting-Fishing, Screening, Foods, Etiquette, Games. Ability factors may be grouped as follows: Self-concepts, the factors are Conformity Needs and Impulsion; under Autobiographical Activities, Scholasticism and Activity Level; and under Inventoried Interest, Business, Outdoors-Shop Interest, Cultural Interests and Science. A combination of Self-concept and Autobiographical Activities includes Leadership, Sociability and Introspection. According to Lohnes and Cooley, the factors that are most powerful predictors in their studies under the Abilities Domain were Verbal Knowledge and Mathematics, and under the Motivational Domain were the four interest factors, Business Interests, Outdoors-Shop Interest, Cultural Interest and Science Interest, as well as Scholasticism, or an academic orientation.

For those with a more intense interest in techniques of and the composition of these factors, I suggest you obtain Measuring Adolescent Personality[3]. For those who have an interest in developmental studies involving career plans of growing adolescents, I suggest Predicting Development of Young Adults[4].

Utilizing the MAP factors as derived by Lohnes, the stage was set for a rather complete and comprehensive analysis of personality factors as related to career choice. The same seven career groups used in the one-year study were selected for males:

1. Mathematician
2. Physical Scientist
3. Biologist
4. Engineer
5. Mathematics Teacher
6. Science Teacher
7. Other Secondary School Teachers

For females, the decision was made to include Elementary School Teacher as one of the career groups. After consultation with the Project TALENT staff, it was discovered there were not enough individuals in each of the science categories of the mathematicians, physical scientists, biologists and engineers, so these science areas were grouped under one heading, Scientist. Thus, there were five career groups for the analysis performed on the five-year follow-up of female careers. These were:

1. Scientists
2. Elementary Teachers
3. Mathematics Teachers
4. Science Teachers
5. Other Secondary School Teachers

The 22 factors derived from the original test battery were used as predictor variables. Thus, for the males, there was a 22 variable, seven-group discriminant analysis, and for the females, a 22 variable, five-group discriminant analysis. These analyses were performed on the five-year follow-up data for the high school graduating class of 1960. For males N = 645, and for females N = 1,054. The data for males will be presented first.

Table II-1(M) shows the number of subjects for each of the seven career groups for males on the five-year follow-up data. This table shows the number in each occupational group five years after high school graduation. Data presented in later chapters will demonstrate the career paths which are followed by individuals who ended up in these five-year career choice categories. Table II-2(M) gives the group means and grand means by career groups on the 22 MAP factors. Table II-3(M) shows the deviations from the grand mean for each career group on the 22 factors and is a little easier to work with than Table II-2(M).

Please note, in examining Table II-3(M) that the deviations from the grand mean are weighted by the size of the career groups and do not add up to zero.

Table II-1(M)

Number of Subjects for Each of the Seven Career Groups for Males on Five-Year Follow-Up Study

Group		N
1.	Mathematician	53
2.	Physical Scientist	231
3.	Biologist	32
4.	Engineer	128
5.	Mathematics Teacher	70
6.	Science Teacher	55
7.	Secondary School Teacher	76
	TOTAL	645

Table II-2(M)

Group Means and Grand Means by Career Group and Twenty-Two Factors (Males)

Factor		Mathema-tician	Physical Scientist	Biologist	Engineer	Mathematics Teacher	Science Teacher	Secondary School Teacher	Grand X
VKN	1	58.87	58.33	61.59	53.65	52.11	56.67	56.95	56.63
PSA	2	47.40	47.23	45.69	49.12	48.39	45.73	48.89	47.73
MAT	3	82.28	78.42	68.88	72.29	76.24	70.02	64.83	74.49
H-F	4	59.34	64.14	72.72	63.33	60.27	67.45	64.58	63.92
ENG	5	42.72	39.91	40.84	41.12	43.27	41.38	43.22	41.31
VIS	6	59.96	60.94	57.38	61.53	59.26	60.65	54.20	59.80
COL	7	36.28	38.51	40.75	41.49	36.59	39.91	38.00	38.88
ETI	8	44.19	42.67	42.53	43.14	46.81	42.49	44.00	43.47
MEM	9	44.55	42.87	44.28	43.56	45.96	44.05	44.80	43.88
SCR	10	51.34	53.46	49.56	52.67	52.70	53.95	51.43	52.66
GAM	11	55.15	55.28	54.16	55.00	53.96	53.96	52.67	54.59
BUS	12	43.51	45.13	42.16	46.77	50.61	46.09	50.42	46.47
CON	13	45.21	46.90	45.66	47.49	46.76	46.02	47.87	46.84
SCH	14	58.04	57.74	54.31	55.80	56.49	55.13	52.67	56.25
OUT	15	59.06	61.61	64.78	64.20	60.69	64.53	61.43	62.20
CUL	16	36.49	36.62	43.63	35.73	35.44	39.47	42.54	37.59
ACT	17	51.42	51.90	50.72	53.62	48.40	52.99	51.20	51.69
IMP	18	52.66	53.08	51.16	51.92	52.50	50.38	52.26	52.35
SCI	19	70.34	71.79	69.66	67.12	68.64	70.56	63.63	69.23
SOC	20	42.58	44.08	45.09	47.26	48.07	50.78	52.34	46.62
LEA	21	48.60	50.09	48.81	49.99	51.91	50.76	51.36	50.29
INT	22	53.02	52.34	50.97	50.95	50.73	50.82	50.53	51.53

Table II-3(M)

Group Deviations from Grand Means (Males)
by Career Groups and Twenty-Two Factors

		Mathematician	Physical Scientist	Biologist	Engineer	Math Teacher	Science Teacher	Secondary School Teacher
VKN	1	2.24	1.70	4.96	-2.98	-4.52	.04	.32
PSA	2	- .34	- .51	-2.05	1.38	.65	-2.01	1.16
MAT	3	7.79	3.93	-5.62	-2.20	1.75	-4.47	-9.66
H-F	4	-4.58	.21	8.79	- .60	-3.65	3.53	.65
ENG	5	1.41	-1.40	- .46	- .19	1.96	.07	1.92
VIS	6	.17	1.14	-2.42	1.73	- .54	.86	-5.60
COL	7	-2.60	- .37	1.87	2.61	-2.29	1.03	- .88
ETI	8	.72	- .80	- .94	- .33	3.34	- .98	.53
MEM	9	.67	-1.01	.40	- .32	2.08	.17	.92
SCR	10	-1.32	.80	-3.09	.02	.04	1.29	-1.22
GAM	11	.56	.68	- .44	.41	- .64	- .63	-1.92
BUS	12	-2.96	-1.35	-4.32	.29	4.14	- .38	3.95
CON	13	-1.63	.06	-1.19	.65	- .08	- .82	1.03
SCH	14	1.79	1.49	-1.94	- .46	.23	-1.13	-3.58
OUT	15	-3.14	- .59	2.58	2.00	-1.51	2.33	- .77
CUL	16	-1.10	- .97	6.03	-1.86	-2.15	1.88	4.95
ACT	17	.27	.21	.97	1.93	-3.29	.31	- .49
IMP	18	.31	.73	-1.19	- .43	.15	-1.77	- .08
SCI	19	1.11	2.56	.43	-2.11	- .59	1.33	-5.60
SOC	20	-4.03	-2.54	-1.52	.64	1.46	4.17	5.73
LEA	21	1.69	- .20	-1.48	- .30	1.62	.47	1.07
INT	22	1.48	.81	- .57	- .58	- .81	- .72	-1.01

In examining Table II-3(M), one can see a pattern beginning to emerge. For example, on factor one, the Verbal Knowledge factor (VKN), Biologists score the highest and Mathematics Teachers lowest. On factor number three, Mathematics (MAT), as one might expect, Matheticians score the highest followed by Physical Scientists. Secondary School Teachers were lowest on this scale, and Biologists also are low on the mathematical ability scale. On scale number four, Biologists are high on the Hunting-Fishing factor (H-F) and the Mathematicians and Math Teachers very low on this factor. Science Teachers rank second behind Biologists on this scale. On scale 19, Science (SCI), the Secondary Teachers score low on this scale while the Physical Scientists are on the high end. It is also interesting to note that Engineers are below the mean on the Science Interest scale. On scale number 20, Sociability (SOC), the Mathematicians, Physical Scientists and Biologists are all below the mean and all the teaching categories above the mean, with Secondary Teachers being the highest and Engineers approximately on the mean.

If career groups are examined separately, there are striking differences. For example, looking at Mathematicians, one can see that this group is far above the mean on the Mathematics ability scale, and below the mean on Hunting-Fishing, Outdoors-Shop Interest and Sociability, whereas Secondary Teachers are below the mean on Mathematical ability and Science but above the mean on Sociability (social interest). In examining the Science Teacher group, the data tends to support previous research. Science Teachers rank above the mean on Sociability and have the second highest score in Science Interest, but are below the mean in Mathematics. In some areas, such as Sociability, Science Teachers "look like" other Secondary Teachers, but in areas such as Science Interest, the Science Teacher tends to "look more like" a Scientist. Similarly with Mathematics

Teachers, in some ways the group resembles the Mathematician, for example, in low scoring on Hunting-Fishing, but has a positive score on Sociability, as contrasted with the Mathematicians' negative scoring on the Sociability scale. Scoring by career groups will be more carefully considered in the section dealing with individual careers.

Table II-4(M) gives the explained freedom for each group with the multiple R,f-score, and level of significance of the separation of the groups. Table II-5(M) shows the integrated f ratios converted to standard scores for all 22 factors and shows the relative predictive value for each factor taken one at a time. In examining Table II-5(M), it is interesting to note the sequence of the relative predictive value of the various factors. The highest weighted predictive factor is Mathematics (factor number three), second most predictive factor, number 20, Sociability; followed by factor one, Verbal Knowledge; factor 19, Science Interest; and factor 12, Business Interest. Again, there is a pattern of verbal and mathematical abilities having strong discriminating powers and interest scales of Science and Sociability contributing to separation among the groups.

With the seven group discriminate analysis, six discriminate functions were obtained. The first three of these were significant. Table II-6(M) gives the variant-canonical correlations of the first three discriminate functions with the 22 factors. Looking at Table II-6(M), the first function appears to be Mathematics versus Sociability, the second function Verbal Knowledge versus Business Interest, and the third function Verbal Knowledge versus Outdoors Interest.

Table II-4(M)

Explained Freedom for Each Group

	Multiple R	F	Z	Significance
Mathematician	.280	2.402	3.367	.001
Physical Scientist	.343	3.759	5.389	.001
Biologist	.284	2.486	3.512	.001
Engineer	.303	2.868	4.137	.001
Mathematics Teacher	.303	2.856	4.118	.001
Science Teacher	.238	1.701	1.975	.05
Secondary School Teacher	.415	5.873	7.666	.001

Table II-5(M)

Univariate F Ratios Converted to Standard Scores for Twenty-Two Factors

Function		Multiple R	F	Z
VKN	1	.281	9.143	5.741
PSA	2	.112	1.362	.750
MAT	3	.377	17.607	8.251
H-F	4	.226	5.703	4.214
ENG	5	.161	2.817	2.310
VIS	6	.243	6.663	4.693
COL	7	.160	2.800	2.296
ETI	8	.131	1.661	1.376
MEM	9	.101	1.107	.367
SCR	10	.131	1.863	1.378
GAM	11	.095	.973	.143
BUS	12	.250	7.060	4.878
CON	13	.072	.547	- .753
SCH	14	.158	2.736	2.241
OUT	15	.172	3.256	2.668
CUL	16	.239	6.421	4.577
ACT	17	.155	2.604	2.124
IMP	18	.077	.636	- .535
SCI	19	.280	9.058	5.708
SOC	20	.300	10.514	6.237
LEA	21	.091	.885	- .017
INT	22	.079	.663	- .472

Table II-6(M)

Variate-Canonical Variate Correlations
of First Three Discriminant Functions
by Twenty-Two Factors

Function		I	II	III
VKN	1	-.152	.599	.399
PSA	2	.071	-.217	-.078
MAT	3	-.723	-.193	.339
H-F	4	.137	.513	-.208
ENG	5	.214	-.202	.207
VIS	6	-.407	-.067	-.403
COL	7	.030	.123	-.468
ETI	8	.076	-.254	.168
MEM	9	.1?2	-.117	.125
SCR	10	-.114	-.058	-.156
GAM	11	-.187	.006	-.077
BUS	12	.360	-.414	.024
CON	13	.062	-.062	-.094
SCH	14	-.316	-.056	.056
OUT	15	.089	.169	-.478
CUL	16	.357	.384	.202
ACT	17	-.068	.094	-.334
IMP	18	-.084	-.058	.107
SCI	19	-.485	.230	.088
SOC	20	.576	-.098	-.166
LEA	21	.112	-.110	.003
INT	22	-.139	.035	.098

Table II-7(M)

Discriminant Function Centroids
Standardized by Career Groups

	I	II	III
Mathematician	- .551	- .141	.578
Physical Scientist	- .408	.136	.045
Biologist	.302	1.088	.060
Engineer	.010	- .252	- .508
Mathematics Teacher	.187	- .714	.201
Science Teacher	.320	.421	- .242
Secondary School Teacher	1.073	.005	.280

Table II-7(M) shows discriminate function centroids standardized by career groups on discriminate functions one, two and three. Using the values for these group centroids, it is possible to plot a two dimensional chart taking the factors two at a time. Since factor three is somewhat similar to factor two, it was decided to plot only factor one versus factor two. This plot is shown in Figure II-1(M) as a two dimensional separation on factors one and two for the seven career groups. This display in Figure I makes it readily apparent that there is significant separation among the groups. The various career groups do indeed differ using the 22 MAP factors as predictor variables. It is interesting to note the grouping of the career groups, with the Biologists, Science Teachers, and Other Secondary Teachers occupying one quadrant, Physical Scientists in a quadrant by themselves, Mathematicians in a quadrant by themselves, the Engineers and Mathematics Teachers in the fourth quadrant. Even though the Biologists, Science Teachers and Other Secondary School Teachers are in the same quadrant, they are still widely separated.

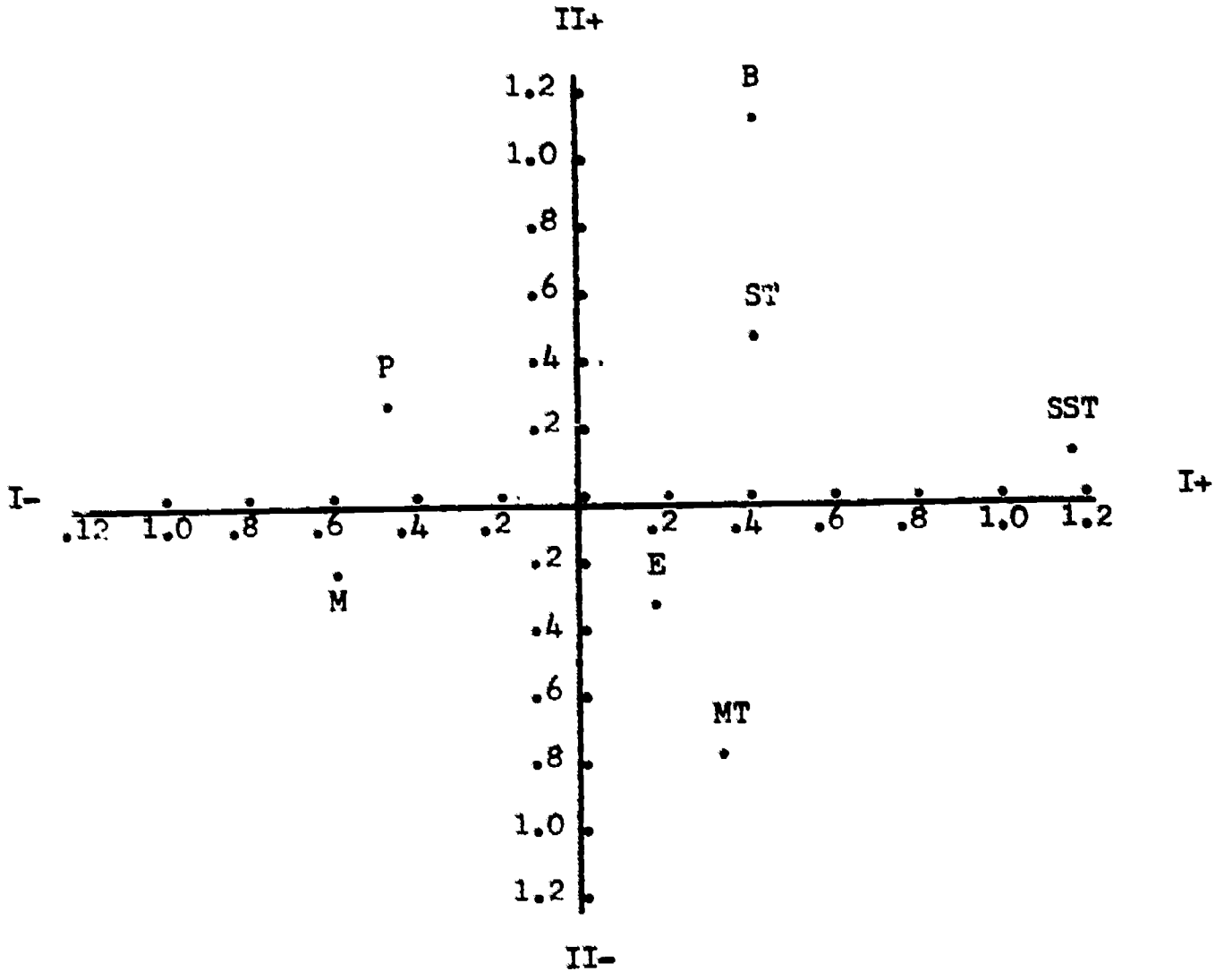
Personality Factors and Female Career Choice

The sample for females (N = 1,064) is larger than the sample for males primarily because of the inclusion of Elementary Teachers as one of the career fields included in the analyses. Table II-1(F) shows the five groups: Scientists, Elementary Teachers, Science Teachers, Math Teachers and Other Secondary Teachers and the number in each of these fields at the time of the five-year follow-up study. The grouping of the Scientists category produced only 59 females who entered one of the science fields which include the physical scientists, mathematicians, biologists and [illegible]rs. By far the largest number, 790, entered Elementary School teaching

FIGURE II - 1(M)

DISCIMINANT FUNCTION CENTROIDS
STANDARDIZED

Factor I vs Factor II



M = Mathematician
P = Physical Scientist
E = Engineer
B = Biologist
MT = Mathematics Teacher
ST = Science Teacher
SST = Secondary School Teacher

Table II-1(F)

Number of Subjects for Each of the Five Career Groups for Females on Five-Year Follow-Up Study

	Group	N
1.	Scientist	59
2.	Elementary Teacher	790
3.	Mathematics Teacher	66
4.	Science Teacher	44
5.	Secondary School Teacher	55
	TOTAL	1,054

Table II-2(F) gives the group means and grand mean by career groups by 22 factors for the females, and Table II-3(F) shows the group deviations from the grand mean for the females by the five career groups and 22 factors.

Please note, in examining Table II-3(F) that the deviations from the grand mean are weighted by the size of the career groups and do not add up to zero. On the Mathematical Ability (factor 3), the Scientist group and the Mathematics Teacher group are far above the mean with Science Teachers relatively high above and Elementary Teachers below the mean. The second most informative factor is the Science Interest scale (factor 19): Scientists, Science Teachers and Mathematics Teachers are above the mean with Elementary Teachers and Other Secondary Teachers below the mean. The Sociability scale (factor 20) shows the Scientist group, the Mathematics Teacher group and the Science Teacher group relatively far below the mean while the Other Secondary School Teacher and Elementary Teacher hover right around the mean, the Elementary School Teacher being on the positive side. Other factors which show some significant differences are the Verbal Knowledge Factor (Factor 1) with the Science Teachers, Scientists and Secondary Teachers above the mean, and Elementary Teachers and Mathematics Teachers below the mean. In addition, the Business Interest Factor (Factor 12) shows discriminating power with the Scientists being far below the mean, and the Science Teachers and Mathematics Teachers being relatively high above the mean. One factor which comes into play in the female grouping which is not that strong in the male grouping is the Scholasticism Factor (Factor 14). Again, there is a grouping of Scientists, Mathematics Teachers and Science Teachers above the mean and Elementary School Teachers below the mean. In examining the career groups by looking down the factors, it is interesting to note the Scientist group, Mathematics Teacher group and Science Teacher group have a relatively low

Table II-2(F)

Group Means and Grand Means by Career Group and Twenty-Two Factors (Females)

Factor		Scientist	Elementary Teacher	Mathematics Teacher	Science Teacher	Secondary School Teacher	Grand X
VKN	1	57.37	52.05	50.21	55.84	55.14	52.67
PSA	2	51.56	40.77	51.70	52.25	4b.89	50.86
MAT	3	61.78	46.42	64.61	53.25	50.41	49.06
H-F	4	37.27	35.25	35.08	38.57	36.95	35.64
ENG	5	28.32	61.24	61.21	49.73	63.44	61.21
VIS	6	50.03	44.45	50.77	46.34	42.83	45.09
COL	7	63.66	63.40	63.95	63.64	61.01	63.24
ETI	8	53.64	56.99	60.23	53.18	56.84	56.83
MEM	9	59.22	57.88	60.56	56.73	58.24	58.11
SCR	10	47.19	46.42	47.73	47.48	45.36	46.50
GAM	11	44.05	44.79	45.71	41.70	40.74	44.31
BUS	12	44.71	50.55	52.58	47.39	40.21	50.10
CON	13	52.69	55.79	56.24	51.95	55.39	55.45
SCH	14	62.31	55.98	62.56	60.25	58.00	57.11
OUT	15	39.73	37.85	38.77	41.09	39.32	38.28
CUL	16	63.92	65.78	59.26	66.00	66.28	65.32
ACT	17	47.81	46.69	48.45	45.68	44.61	46.63
IMP	18	49.80	45.92	46.95	47.30	48.54	46.50
SCI	19	54.17	40.64	48.73	52.91	42.36	42.57
SOC	20	38.80	47.06	42.91	43.98	45.71	46.08
LEA	21	49.92	54.01	52.56	54.70	54.65	53.78
INT	22	50.42	47.10	45.83	51.02	49.80	47.62

Table II-3(F)

Group Deviations from Grand Means (Females)
by Career Groups and Twenty-Two Factors

		Scientist	Elementary Teacher	Mathematics Teacher	Science Teacher	Secondary School Teacher
VKN	1	4.71	-0.62	-2.45	3.17	2.47
PSA	2	0.70	-0.08	0.84	1.39	-0.96
MAT	3	12.72	-2.64	15.55	4.19	1.35
H-F	4	1.63	-0.39	-0.56	2.93	1.31
ENG	5	-2.89	0.03	0.00	-1.48	2.23
VIS	6	4.94	-0.64	5.68	1.25	-2.26
COL	7	0.42	0.16	0.71	0.39	-2.23
ETI	8	-3.19	0.16	3.39	-3.65	0.01
MEM	9	1.11	-0.23	2.45	-1.38	0.13
SCR	10	0.69	-0.07	1.23	0.98	-1.14
GAM	11	-0.26	0.48	1.40	-2.61	-3.57
BUS	12	-5.39	0.45	2.48	-2.71	-0.89
CON	13	02.76	0.34	0.79	-3.50	-0.06
SCH	14	5.20	-1.13	5.45	3.14	0.89
OUT	15	1.45	-0.43	0.49	2.81	1.03
CUL	16	-1.41	0.46	-6.07	0.68	0.96
ACT	17	1.18	0.06	1.82	-0.95	-2.02
IMP	18	3.30	-0.57	0.46	0.80	2.04
SCI	19	11.60	-1.93	6.16	10.34	-0.21
SOC	20	-7.29	0.97	-3.17	-2.11	-0.38
LEA	21	-3.86	0.23	-1.21	0.93	0.88
INT	22	2.81	-0.51	-1.78	3.41	2.18

deviation from the grand mean, which means that they are quite similar to the normative female population which took the test data in 1960; the major difference is that these three groups are higher on Mathematics and Science Interest. Table II-4(F) shows the explained freedom for each group and the multiple R,f ratios and significance for each group, each of them beyond the .001 level. Table II-5(F) shows the univariant f ratios converted to standard scores for all 22 factors in order of the significance of the factors. The order of predictive value of the factors taken one at a time begins with factor 3, Mathematics, followed by factor 19, Science Interest; factor 14, Scholasticism; factor six, Visual Reasoning; factor 20, Sociability; and factor 1, Verbal Knowledge. This is a slightly different pattern from that which we observed on the males.

Table II-6(F) shows the first three discriminate functions by 22 factors. The three major factors operating on function I are 3, 19 and 20, and may be termed a Math-Science versus Sociability function. Function two looks like a Verbal Knowledge versus Business Interest. Discriminate function three does not appear to be of particular interest, and does not seem to contain definitive polarities.

Table II-7(F) shows discriminate function centroids standardized by each of the career groups. Using information from Table II-7(F), it is possible to plot the group centroids for each of the career groups on a two dimensional plane using factor one versus factor two. Figure II-1(F) shows the discriminate function centroids for each of the career groups plotted using factor one versus factor two. It is interesting to note that the three career groups of Science Teachers, Scientists and Other Secondary School Teachers are in the first

Table II-4(F)

Explained Freedom for Each Group

	Multiple R	F	Z	Significance
Scientist	0.399	8.863	10.278	.001
Elementary Teacher	0.477	13.818	13.233	.001
Mathematics Teacher	0.367	7.306	9.095	.001
Science Teacher	0.258	3.349	4.918	.001
Secondary School Teacher	0.239	2.831	4.136	.001

Table II-5(F)

Univariate F Ratios Converted to Standard Scores
For Twenty-Two Factors

Function		Multiple R	F	Σ
VKN	1	0.200	10.954	5.363
PSA	2	0.058	0.886	0.067
MAT	3	0.426	58.264	12.095
H-F	4	0.105	2.906	2.038
ENG	5	0.124	4.119	2.779
VIS	6	0.221	13.442	6.014
COL	7	0.073	1.405	0.743
ETI	8	0.137	5.018	3.237
MEM	9	0.073	1.403	0.740
SCR	10	0.070	1.292	0.611
GAM	11	0.140	5.211	3.328
BUS	12	0.161	7.013	4.084
CON	13	0.105	2.906	2.038
SCH	14	0.246	16.833	6.780
OUT	15	0.083	1.806	1.155
CUL	16	0.128	6.671	3.952
ACT	17	0.101	2.696	1.889
IMP	18	0.109	3.175	2.219
SCI	19	0.377	43.560	10.669
SOC	20	0.220	13.331	5.987
LEA	21	0.102	2.731	1.915
INT	22	0.120	3.819	2.611

Table II-6(F)

Variate-Canonical Variate Correlations
of First Three Discriminant Functions
by Twenty-Two Factors

Function		I	II	III
VKN	1	0.212	0.522	-0.018
PSA	2	0.063	-0.037	0.037
MAT	3	0.773	-0.371	-0.247
H-F	4	0.112	0.246	-0.075
ENG	5	-0.122	-0.011	-0.376
VIS	6	0.326	-0.340	0.357
COL	7	-0.014	-0.124	0.401
ETI	8	-0.095	-0.391	-0.078
MEM	9	0.131	-0.134	-0.488
SCR	10	0.056	-0.118	0.296
GAM	11	-0.049	-0.322	0.261
BUS	12	-0.143	-0.359	-0.314
CON	13	-0.160	-0.240	-0.021
SCH	14	0.438	-0.104	0.035
OUT	15	0.112	0.119	0.024
CUL	16	-0.206	0.380	0.079
ACT	17	0.019	-0.263	0.348
IMP	18	0.177	0.148	-0.188
SCI	19	0.692	0.176	0.225
SOC	20	-0.404	-0.030	-0.049
LEA	21	-0.130	0.068	-0.104
INT	22	0.118	0.322	-0.101

Table II-7(F)

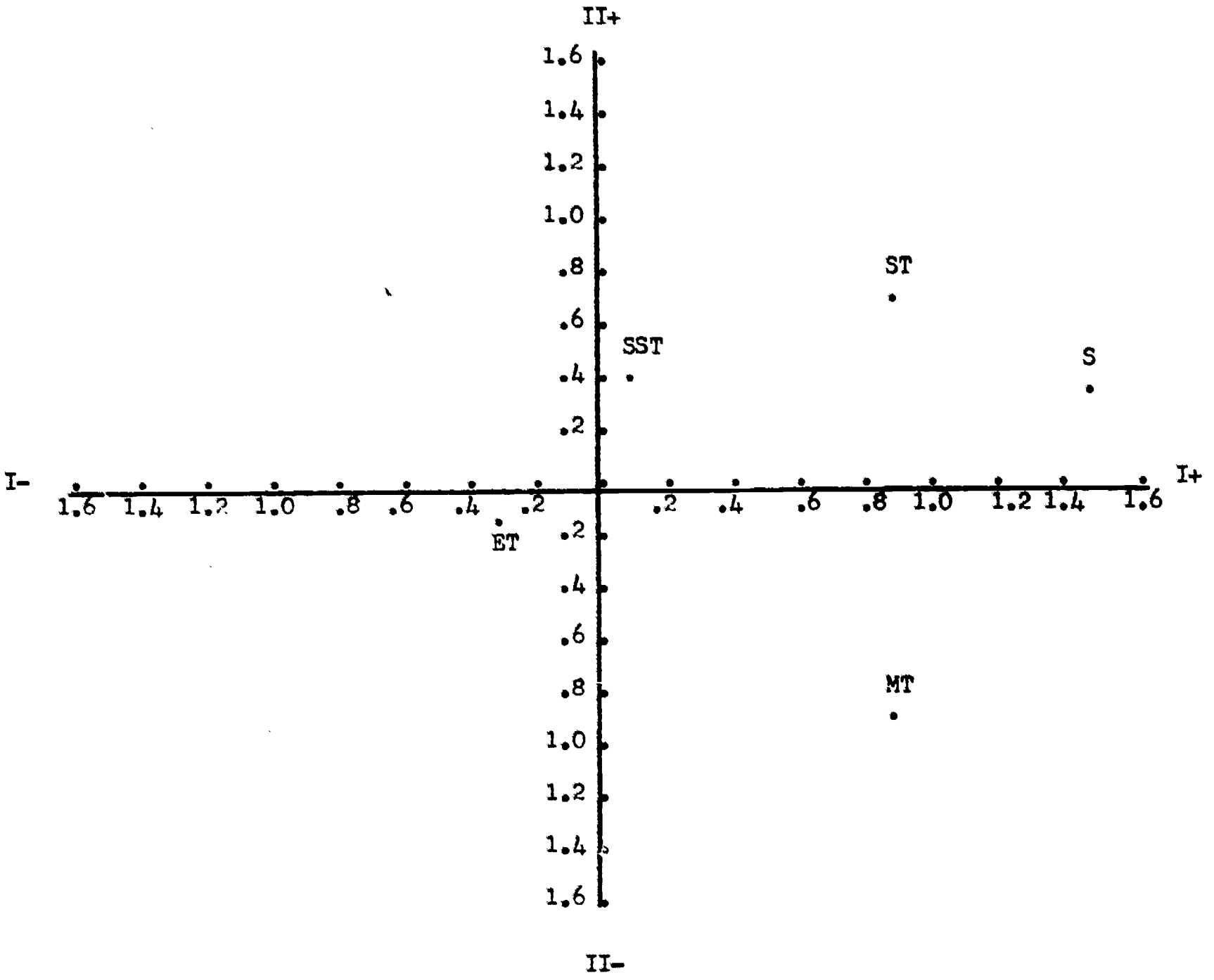
Discriminant Function Centroids
Standardized by Career Groups

	I	II	III
Scientist	1.553	0.268	0.262
Elementary Teacher	-0.270	-0.032	0.053
Mathematics Teacher	1.060	-0.913	-0.193
Science Teacher	0.837	0.714	0.268
Secondary School Teacher	0.161	0.405	-0.594

FIGURE II - 1(F)

DISCRIMINANT FUNCTION CENTROIDS
STANDARDIZED

Factor I vs Factor II



S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher
SST = Secondary School Teacher

quadrant, with Mathematics Teachers by themselves in quadrant IV, and Elementary Teachers fairly close to the axis of the two factors. The separation of the Mathematics Teachers from the Science Teachers, Scientists and Other Secondary School Teachers is due to discrimination primarily on the Verbal Knowledge and Business Interest factors. This may be observed by looking at Table II-3(F) which shows the polarity between the Mathematics Teacher group and the other three groups.

Comparison of Male and Female Personality Factors

It is interesting to examine some of the differences between males and females on the MAP factors. Comparing Table II-5(M) and Table II-5(F), it can be seen that the factors supplying the discriminating power among career groups are similar, although in somewhat different sequence. For males the strongest factor was Mathematics, factor 3; Sociability, factor 20; and Verbal Knowledge, factor 1. Whereas for the females, Mathematics was again the primary factor, but Science Interest, factor 19, was a powerful factor, with Sociability ranking fifth and Verbal Knowledge ranking sixth. Business Interest was a fairly powerful discriminate among the male career groups, whereas Scholasticism, factor 14, was a fairly powerful factor among the female career group patterns. In both groups the factor providing the most discrimination was Mathematics, factor 3, which tended to separate the Science-Mathematics oriented groups from the teacher oriented groups, except that Mathematics Teachers and Science Teachers are high on the factor, though not as high as science and mathematics groups. It is also interesting to note the separation of the Science and Mathematics Teachers from

each other. The Science Teacher, both male and female, is closer to the Other Secondary School Teacher than is the Mathematics Teacher. This can be seen by looking at Figure II-1(M) and Figure II-1(F) which show the plot of the discriminate function centroids. In both cases the Science Teacher is in the same quadrant with the other Secondary School Teacher, but widely separated from the Mathematics Teacher; and in both cases the Mathematics Teacher is widely separated from any of the other groups with the exception of the male Engineers. This tends to support the idea that although high school mathematics and science teachers are in similar curriculum areas, there may be a wide disparity between their interest and motivations, and there may be different personality factors operating in the career choice process for these two groups.

The inclusion of Elementary School Teachers as a career group for females does not seem to markedly affect the career pattern model. As was noted previously, this career group seems to be characterized primarily by a lack of discriminating deviations. The only factors which seem to provide clues to this group are their low scores in Mathematics and Science Interest. This tends to support a commonly quoted hypothesis that elementary teachers are not interested particularly in science or mathematics and in turn are not particularly adept in teaching in these two areas in the elementary school curriculum.

Some interesting comparisons can be made between males and females on the grand means on the 22 MAP factors by examining Tables II-2(M) and II-2(F). For example, the mean on the Mathematics factor for males is almost 75 and for females it is approximately 50. On the Hunting-Fishing factor the mean for males is almost 64 and for females a little over 35; on the English factor the

female mean is nearly 20 points higher than the male. On the Color-Foods factor the females are about five points higher than the males; on the Etiquette factor they are 13 points higher; on the Memory factor the females are 15 points higher. However, moving on down the list, note that on Outdoors Interest the males scored approximately 62 while the females scored around 38. On the Culture factor the females are around 65, and the males around 37.5. On the Science Interest factor the males outscore the females 69 to 42. One interesting comparison is on the Sociability factor where the two score almost exactly the same. As can be seen on the 22 factors and the tests that made up these composite factor scores, there are marked differences between males and females on a number of factors and most in the direction one would rationally predict.

Personality and Career Choice

By using the 22 MAP factors derived from the original test battery, it is possible, using multiple group discriminate analysis, to separate the career groups from each other and to relate the various factors to the characteristics of each group. This lends credence to the thesis that occupational choice has a component of predictability and that there are certain personality factors, including motives, abilities, interests which can be associated with a particular occupational group, and that even in a general career group, such as science or teaching, that it is possible to make distinctions among the different career branches within that general career category. As will be shown in later chapters, by following career patterns over a period of time, there is considerable

movement into and out of each career group and it is not beyond conjecture that much of this career goal changing is influenced by personality factors.

As an example of relating personality factors to career choice, we can examine the male twelfth graders who graduated from high school in 1960. In the original 1960 testing program the students were asked to state their career plans. Out of that group 4,720 indicated they wanted to be in one of the seven career groups listed. From this original pool of 4,720, an additional 394 stated at the one-year level, or on the one-year follow-up in their freshman year in college, that they had plans to be in one of these seven career groups. This makes a total of 5,114 that either in high school or in the one-year follow-up indicated that they wanted to be in one of these seven career groups. On the five-year follow-up data, there were 645 who actually entered the field in one of these occupational groups. Additional information on these career patterns will be given in chapter three. The stability of plans from high school plans to one-year follow-up to five-year entrance into the field is extremely low. The stability over a five-year period was less than 10 percent for six of the seven groups. Given this low stability of career plans, and the large movement in and out of these occupational groups, it was still possible in the five-year follow-up using these criterion groups to use test data gathered five years earlier, in 1960, and demonstrate that all seven groups differed significantly from each other on this antecedent test data. This lends considerable strength to the use of such data in career counseling and predictive manpower studies.

Summary

Using the 22 MAP factors developed by Paul Lohnes from the original test battery administered by Project TALENT in 1960, multiple group discriminate

analyses were performed for seven occupational groups for males, which included Mathematicians, Physical Scientists, Biologists, Engineers, Mathematics Teachers, Science Teachers and Other Secondary Teachers, and five career groups for females which included Scientists, Elementary School Teachers, Secondary Mathematics Teachers, Secondary Science Teachers and Other Secondary Teachers. The total N for males was 645, and for females, 1,054. Using the antecedent data as predictors, it was possible to separate the career groups using discriminate analysis techniques and all career groups were significantly different from each other within the male and female populations. Personality factors reflected in the 22 MAP factors were related to the career choices and the relative predictive value of the scales was discussed. The factors of Mathematics, Science Interest, Social Interest and Verbal Knowledge were the most discriminating, in general, of the 22 factors, in both male and female career choices. Much of the information contained in this data could be of value and use to those involved in occupational and career counseling and demonstrates the effect personality factors have on the career choice process.

REFERENCES

1. Lohnes, Paul R. Measuring Adolescent Personality. Report I, USOE Cooperative Research Project 3051. Project TALENT, School of Education, University of Pittsburgh, 1966.

2. Lohnes, Paul R. and W. W. Cooley. Project TALENT: Predicting Development of Young Adults. American Institutes for Research, School of Education, University of Pittsburgh, 1968, pp. 1-8.

3. Lohnes, Paul R. op cit.

4. Lohnes, Paul R. and W. W. Cooley. op cit.

Chapter III

LONGITUDINAL CAREER PATTERN STUDIES

The data presented in Chapter II is of interest in describing the difference among career groups and the personality factors which affect career choice. The data does not, however, provide evidence as to the actual career patterns of individuals. In order to determine the career patterns associated with each career group, a different type of data was requested from Project TALENT. The procedure used in this second data analysis was to identify from the Project TALENT data bank all students who, at any one of the measured stages in their career, indicated by their career plans an interest in any one of the occupational career groups under study. For males these occupational groups included: Mathematicians, Physical Scientists, Biologists, Engineers, Mathematics Teachers, Science Teachers and Other Secondary Teachers. For females the career groups included: Scientists, Elementary School Teachers, Mathematics Teachers and Science Teachers. For the eleven-year follow-up data, the category of College Teacher was included as an occupational group for both males and females.

Career Codes

Once an individual in any of these career groups was identified, a code was formed to identify the career pattern of these subjects. The first number in the code reflects the high school career plans, the second number the one-year follow-up career plans, the third number the career choice at the end of the five-year follow-up study and the fourth number (for twelfth graders only) indicates the occupational field on the eleven-year follow-up study. The number

nine was used to indicate a student on whom data was missing or for whom data was incomplete at that particular state of the analysis, but who was still in the pool at another stage. Zero was used to indicate an individual who was not in any of the career groups at that particular stage of the analysis. For example, using the twelfth grade class, a student who in high school indicated career plans to be a mathematician; indicated he wanted to be a mathematician in his freshmen year of college; then entered the field of mathematics teaching after graduation from college; and on the eleven-year follow-up was in college teaching would be coded 1158. The first two digits of the code indicating high school plans and one-year follow-up plans as a mathematician, the third digit five-year follow-up choice as a mathematics teacher, and the fourth digit eleven-year follow-up choice as college teaching. As another example, if a student started out to be an engineer in high school, entered college to major in biology and ended up selling insurance on the five-year follow-up, his code would be 430. The first digit indicates an interest in engineering, the second digit indicates an interest in biology, and the last digit (zero) means he was out of the pool at the five-year follow-up stage.

There are two minor modifications in this coding. One, in the 1960 career groupings, based on high school career plans, there was no separation by teaching field among those who wanted to enter teaching. Thus in the 1960 data mathematics teachers and science teachers and other secondary teachers are all grouped together under one career code. Second, there were modifications necessary in the female career groups so that similar codes for females do not correspond to the same codes for male career groups. There were not enough females in science

careers to warrant further separation so they are all grouped under the heading of scientist. Also included in female career choice possibilities was elementary teaching.

Utilizing this data from Project TALENT, it was possible to follow individual students' careers from high school plans, first year college plans, entrance into the field of work on the five-year follow-up, and with the twelfth graders, an eleven-year follow-up study. Tables III-1, III-2 and III-3 show the data available for the study, the career coding scheme and career code format.

Career Pattern Data

The decisions as to how best to present the data for the career pattern analysis were somewhat complicated. In three of the grades, nine, ten and eleven, there was a three-digit career code for each individual, and for grade twelve there is a four-digit code for each individual. This necessitated a cross-tabulation format which is a bit complex. For grades nine, ten and eleven the decision was made to form a table for each career group using the five-year follow-up data and to tabulate for each of these occupational career categories the high school and one-year career plans for the individuals who fell in that five-year career category. Thus, for each grade level, there is a set of tables for both males and females based on the five-year career-categories and included in each of these sets of tables are the high school and one-year follow-up career plans. Figure III-1 illustrates how the tables are structured. For each of the tables (one for each five-year career category), the high school plans are recorded in the columns and the one-year follow-up plans are recorded in the rows. There are row and column totals and a total N for each table.

Table III-1

Career Pattern Data Included in this Study

Grade	Sex	High School Plans	One-Year Follow-Up	Five-Year Follow-Up	Eleven-Year Follow-Up
12th	M F	1960	1961	1965	1971
11th	M F	1960	1962	1966	
10th	M F	1960	1963	1967	
9th	M F	1960	1964	1968	

TABLE III - 2

CODING SCHEME FOR CAREER PATTERNS

MALES	High School	One-Year Follow-Up	Five-Year Follow-Up	Eleven-Year Follow-Up
Mathematician	1	1	1	1
Physical Scientist	2	2	2	2
Biologist	3	3	3	3
Engineer	4	4	4	4
Math Teacher	5	5	5	5
Science Teacher	5	6	6	6
Other Secondary Teacher	5	7	7	7
College Teacher				8
Missing Data	9	9	9	9
Other Career Choice	0	0	0	0
FEMALES				
Scientist	1	1	1	1
Elementary Teacher	2	2	2	2
Math Teacher	3	3	3	3
Science Teacher	3	4	4	4
College Teacher				8
Missing Data	9	9	9	9
Other Career Choice	0	0	0	0

TABLE III - 3

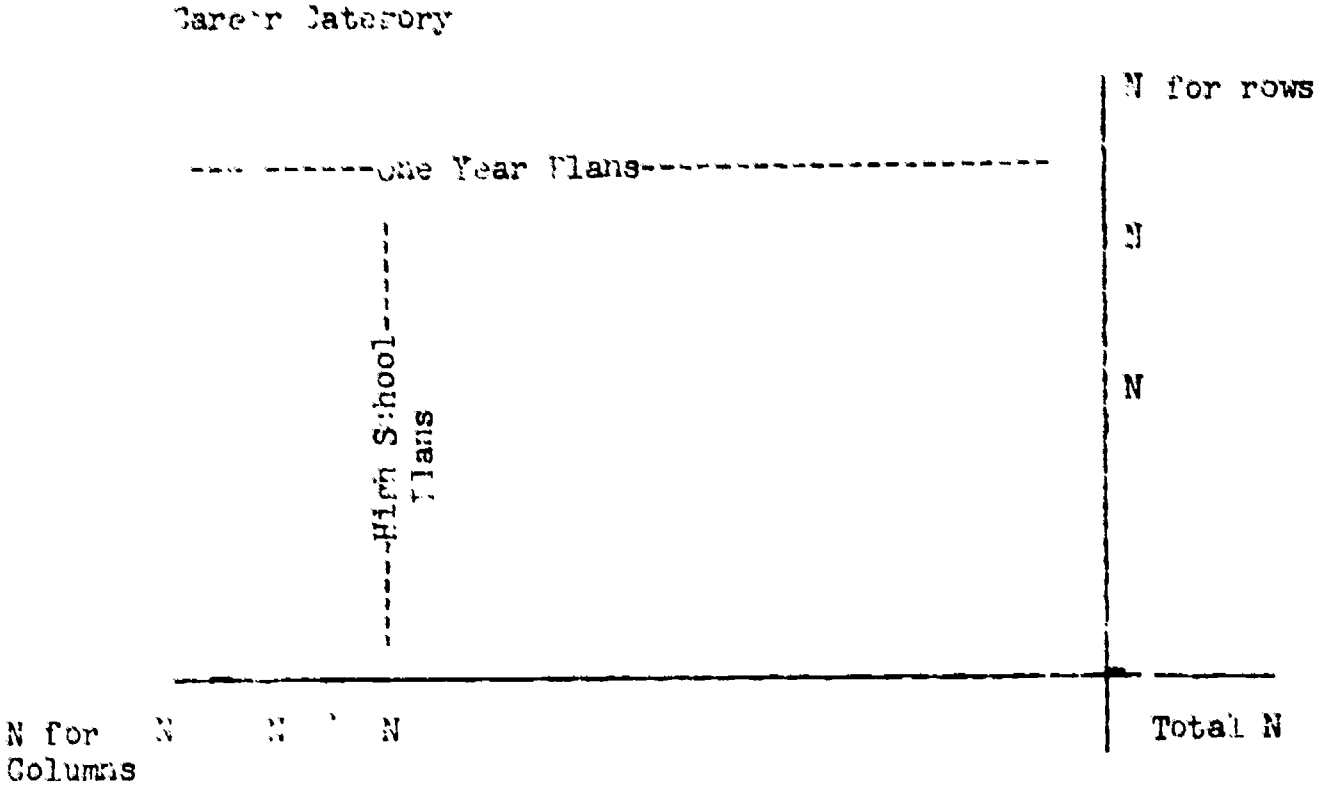
CAREER CODING FORMAT

High School Plans	One-Year Follow-Up	Five-Year Follow-Up	Eleven-Year Follow-Up

FIGURE III - 1

STRUCTURE OF TABLES FOR EACH

FIVE YEAR CAREER CATEGORY



An explanation is needed in working with the tables and interpreting the size of the sample involved in each of the sets of tables for each grade level. For example, in looking at the ninth grade male data, there is a total N of 6,993 included in the eight tables. This figure is, however, somewhat misleading. Included in this total are those who had indicated an interest in high school in one of the career categories; an additional number who indicated an interest in one of the career categories on the one-year follow-up, but who had dropped out by the time of the five-year follow-up; and another group who were picked up at the one-year follow-up level who stayed in one of the career groups at the five-year level. In the ninth grade male data, there were 5,376 who indicated an interest at the high school level, but only 866 remained at the time of the five-year level study, and another 854 who did not indicate an interest in any of the careers in their high school plans but who did indicate an interest at the one-year level and who remained in one of the groups at the five-year level. The total in the seven career groups after five years was 1,720. This information is given at the beginning o the tables for each of the grade and sex categories.

The tables for twelfth graders is a little different from those for grades nine, ten and eleven because the eleven-year follow-up data was available for this group. The data presented for grade twelve is divided into two separate sets of tables. The first set of tables indicates high school plans by five-year follow-up by eleven-year follow-up. The second set of data indicates one-year career plans by five-year follow-up by eleven-year follow-up. Also in the twelfth grade group College Teacher is included as one of the eleven-year follow-up categories.

A problem was encountered in dealing with the twelfth grade data. Since it was impossible to make four-way tables, two separate sets of tables are presented for the twelfth grade. One set shows the patterns from high school plans to five-year follow-up for each eleven year category and the second set shows one-year follow-up by the five-year follow-up for each eleven year career category.

NINTH GRADE MALES

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE YEAR CATEGORY

Total N = 6993

Number Indicating High School Plans	5376
Number Indicating High School Plans Who Remained at Five-Year Level	866
Number Who Entered Pool After High School and Dropped Out	763
Number Who Entered Pool After High School and Stayed	854
Total in Pool After Five Years	1720

TABLE III - 9(M)O
Ninth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - OTHER CAREER CHOICE

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	0	165	457	254	1776	260	2912
Mathematics	30	9	8	2	20	2	71
Physical Science	76	5	54	9	74	4	222
Biologist	34	0	9	11	10	1	65
Engineer	349	19	64	15	333	9	789
Math Teacher	36	8	6	1	17	7	75
Science Teacher	22	1	6	6	7	6	48
Other Secondary Teacher	216	4	18	11	69	50	368
Missing Data	0	61	79	57	466	60	723
Total	763	272	701	366	2772	399	5273

Rows = one-year follow-up

Columns = high school plans

TABLE III - 9(M)1
Ninth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - MATHEMATICIAN

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	6	4	3	1	3	0	17
Mathematics	3	4	0	0	3	0	10
Physical Science	1	0	0	0	1	0	2
Biologist	0	0	0	0	0	0	0
Engineer	5	0	0	0	4	0	9
Math Teacher	2	0	1	0	0	0	3
Science Teacher	0	0	0	0	0	0	0
Other Secondary Teacher	0	0	0	0	0	0	0
Missing Data	3	0	0	0	1	0	4
Total	20	8	4	1	12	0	45

Rows = one-year follow-up

Columns = high school plans

TABLE III - 9(M)2
Ninth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - PHYSICAL SCIENTIST

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	36	3	9	3	15	0	66
Mathematics	0	0	0	100	0	0	1
Physical Science	26	2	28	4	18	1	79
Biologist	0	0	0	1	0	0	1
Engineer	7	0	6	0	10	1	24
Math Teacher	0	0	0	0	1	0	1
Science Teacher	0	0	0	0	0	1	1
Other Secondary Teacher	0	0	0	0	0	0	0
Missing Data	11	0	2	0	3	0	16
Total	80	5	46	8	47	3	189

Rows = one-year follow-up

Columns = high school plans

TABLE III - 9(M)3
Ninth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - BIOLOGIST

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	13	2	3	5	2	1	26
Mathematics	0	0	0	0	0	0	0
Physical Science	0	0	0	1	1	0	2
Biologist	2	0	1	1	1	0	5
Engineer	1	0	0	0	0	0	1
Math Teacher	0	0	0	0	0	0	0
Science Teacher	2	0	1	0	0	0	3
Other Secondary Teacher	0	0	0	0	0	0	0
Missing Data	3	0	0	1	0	0	4
Total	21	2	5	8	4	1	41

Rows = one-year follow-up

Columns = high school plans

TABLE III - 9(M)4
Ninth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - ENGINEER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	216	3	26	6	101	4	356
Mathematics	1	0	0	0	1	0	2
Physical Science	7	1	6	1	6	0	21
Biologist	0	0	0	0	0	0	0
Engineer	179	17	52	13	296	4	561
Math Teacher	2	0	0	0	0	0	2
Science Teacher	0	0	0	0	0	0	0
Other Secondary Teacher	4	0	0	0	0	0	4
Missing Data	76	1	7	6	41	0	131
Total	485	22	91	26	445	8	1077

Rows = one-year follow-up

Columns = high school plans

TABLE III - 9(M)5
Ninth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - MATH TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	9	1	0	0	3	2	15
Mathematics	0	0	0	0	0	0	0
Physical Science	1	0	0	0	0	0	1
Biologist	0	0	0	0	0	0	0
Engineer	0	0	0	0	3	1	4
Math Teacher	6	0	0	0	1	1	8
Science Teacher	0	0	0	0	0	0	0
Other Secondary Teacher	0	1	0	0	1	0	2
Missing Data	3	0	0	0	2	0	5
Total	19	2	0	0	10	4	35

Rows = one-year follow-up

Columns = high school plans

TABLE III - 9(M)6
Ninth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - SCIENCE TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathematics	Phys. Science	Biologist	Engineer	Secondary Teacher	Total
Other Career Choice	8	0	0	1	2	2	13
Mathematics	0	0	0	0	0	0	0
Physical Science	1	1	0	0	0	0	2
Biologist	1	0	0	2	0	0	3
Engineer	0	0	0	0	0	0	0
Math Teacher	1	0	0	0	0	0	1
Science Teacher	2	0	0	0	2	1	5
Other Secondary Teacher	0	0	0	0	0	0	0
Missing Data	0	0	0	0	0	0	0
Total	13	1	0	3	4	3	24

Rows = one-year follow-up

Columns = high school plans

TABLE III - 9(M)7
Ninth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - OTHER SECONDARY TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	125	31	8	3	17	16	172
Mathematics	1	0	0	0	0	0	1
Physical Science	0	1	0	0	0	0	1
Biologist	0	0	0	0	1	0	1
Engineer	5	0	0	0	0	3	8
Math Teacher	2	0	0	0	1	1	4
Science Teacher	0	0	1	1	0	1	3
Other Secondary Teacher	50	1	1	1	7	9	69
Missing Data	33	2	3	0	11	1	50
Total	216	7	13	5	40	28	309

Rows = one-year follow-up

Columns = high school plans

TENTH GRADE MALES

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE YEAR CATEGORY

Total N = 7844

Number Indicating High School Plans	6136
Number Indicating High School Plans Who Remained at Five-Year Level	1232
Number Who Entered Pool After High School and Dropped Out	778
Number Who Entered Pool After High School and Stayed	930
Total in Pool After Five Years	2162

TABLE III - 10(M)0
Tenth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - OTHER CAREER CHOICE

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	0	161	378	300	1724	304	2867
Mathematics	25	8	5	4	22	1	65
Physical Science	64	4	62	6	35	4	175
Biologist	32	0	4	9	8	0	33
Engineer	256	19	35	17	321	2	650
Math Teacher	38	10	1	2	29	21	101
Science Teacher	46	7	5	5	16	13	87
Other Secondary Teacher	317	6	20	24	78	78	523
Missing Data	0	55	96	123	759	128	1161
Total	778	265	606	490	2992	551	5682

Rows = one-year follow-up

Columns = High School Plans

TABLE III - 10(M)1
Tenth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - MATHEMATICIAN

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	12	3	1	0	4	1	21
Mathematics	8	3	3	0	7	0	21
Physical Science	1	1	1	0	1	0	4
Biologist	0	0	0	0	0	0	0
Engineer	2	0	1	0	0	0	3
Math Teacher	1	1	3	0	1	0	6
Science Teacher	0	0	0	0	0	0	0
Other Secondary Teacher	0	0	0	0	0	0	0
Missing Data	4	0	0	0	3	0	8
Total	28	8	9	0	16	2	63

Rows = one-year follow-up

Columns = high school plans

TABLE III - 10(M)2
Tenth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - PHYSICAL SCIENTIST

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	23	4	16	3	15	1	62
Mathematics	2	0	1	0	2	0	5
Physical Science	36	6	50	5	33	2	132
Biologist	0	0	1	0	0	0	1
Engineer	5	0	2	0	12	0	19
Math Teacher	0	0	0	0	0	0	0
Science Teacher	1	0	1	0	3	1	6
Other Secondary Teacher	0	0	1	0	0	0	1
Missing Data	12	2	6	3	13	0	36
Total	79	12	78	11	78	4	262

Rows = one-year follow-up

Columns = high school plans

TABLE III - 10(M)3
Tenth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - BIOLOGIST

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	15	0	4	5	9	1	34
Mathematics	0	0	0	0	0	0	0
Physical Science	1	0	0	1	0	0	2
Biologist	7	0	1	4	0	0	12
Engineer	0	0	0	0	0	0	0
Math Teacher	0	0	0	0	0	0	0
Science Teacher	0	0	0	0	0	0	0
Other Secondary Teacher	2	0	0	0	0	0	2
Missing Data	5	0	0	2	0	1	8
Total	30	0	5	12	9	2	58

Rows = one-year follow-up

Columns = high school plans

TABLE III - 10(M)4
Tenth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - ENGINEER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathematics	Phys. Science	Biologist	Engineer	Secondary Teacher	Total
Other Career Choice	184	6	20	5	100	2	317
Mathematics	2	0	0	0	1	0	3
Physical Science	9	0	7	0	16	0	32
Biologist	0	0	0	0	0	0	0
Engineer	194	20	48	15	392	10	679
Math Teacher	1	1	0	0	1	0	3
Science Teacher	0	0	0	1	2	0	3
Other Secondary Teacher	5	0	0	0	0	0	5
Missing Data	98	4	15	5	87	4	213
Total	493	31	90	26	599	16	1255

Rows = one-year follow-up

Columns = high school plans

TABLE III - 10(M)5
Tenth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - MATH TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	6	3	2	0	5	1	17
Mathematics	2	2	0	0	1	0	5
Physical Science	0	0	1	0	0	0	1
Biologist	0	0	0	0	0	0	0
Engineer	1	1	0	0	4	0	6
Math Teacher	4	0	1	0	3	3	11
Science Teacher	0	0	0	0	0	0	0
Other Secondary Teacher	1	0	0	0	0	1	2
Missing Data	3	0	1	0	2	0	6
Total	17	6	5	0	15	5	48

Rows = one-year follow-up

Columns = high school plans

TABLE III - 10(M)6
Tenth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - SCIENCE TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	11	3	0	5	4	0	23
Mathematics	1	0	0	0	0	0	1
Physical Science	1	0	3	1	1	0	6
Biologist	2	0	0	0	1	0	3
Engineer	0	0	0	0	1	0	1
Math Teacher	1	0	0	0	1	1	3
Science Teacher	6	0	1	3	2	3	15
Other Secondary Teacher	1	1	0	0	0	0	2
Missing Data	2	0	0	2	2	1	7
Total	25	4	4	11	12	5	61

Rows = one-year follow-up

Columns = high school plans

TABLE III - 10(M)7
Tenth Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - OTHER SECONDARY TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	119	4	4	10	24	19	180
Mathematics	0	0	0	0	0	0	0
Physical Science	0	0	0	0	0	0	0
Biologist	0	0	0	0	0	0	0
Engineer	6	0	0	0	2	0	8
Math Teacher	5	0	0	0	3	0	8
Science Teacher	2	0	0	0	1	1	4
Other Secondary Teacher	79	1	10	2	17	31	140
Missing Data	47	0	2	5	12	9	75
Total	258	5	16	17	59	60	415

Rows = one-year follow-up

Columns = high school plans

ELEVENTH GRADE MALES

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE YEAR CATEGORY

Total N = 7309

Number Indicating High School Plans	5848
Number Indicating High School Plans Who Remained at Five-Year Level	1483
Number Who Entered Pool After High School and Dropped Out	542
Number Who Entered Pool After High School and Stayed	919
Total in Pool After Five Years	2402

TABLE III - 11(M)O
Eleventh Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - OTHER CAREER CHOICE

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	0	129	252	171	1398	341	2291
Mathematics	20	19	7	0	18	0	64
Physical Science	55	8	70	7	47	2	189
Biologist	20	0	1	16	5	0	42
Engineer	228	16	34	6	357	3	644
Math Teacher	20	6	1	1	10	14	52
Science Teacher	22	3	8	3	12	16	64
Other Secondary Teacher	177	7	8	7	43	68	310
Missing Data	0	64	157	87	757	186	1251
Total	542	252	538	298	2647	630	4907

Rows = one-year follow-up

Columns = high school plans

TABLE III - 11(M)1
Eleventh Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - MATHEMATICIAN

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	11	2	1	0	7	-	21
Mathematics	2	3	5	0	0	0	10
Physical Science	0	0	3	0	0	0	3
Biologist	0	0	0	0	0	0	0
Engineer	3	0	0	0	3	0	6
Math Teacher	0	1	0	0	0	1	2
Science Teacher	0	0	0	0	0	0	0
Other Secondary Teacher	0	0	0	0	0	0	0
Missing Data	11	4	2	0	6	1	24
Total	27	10	11	0	16	2	66

Rows = one-year follow-up

Columns = high school plans

TABLE III - 11(M)2
Eleventh Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - PHYSICAL SCIENTIST

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathematics	Phys. Science	Biologist	Engineer	Secondary Teacher	Total
Other Career Choice	40	1	21	2	18	4	86
Mathematics	1	2	1	1	3	0	8
Physical Science	20	3	54	5	21	2	105
Biologist	0	0	0	0	0	0	0
Engineer	5	0	2	0	14	0	21
Math Teacher	0	0	1	0	1	0	2
Science Teacher	1	0	0	0	1	0	2
Other Secondary Teacher	0	1	0	0	0	0	1
Missing Data	25	5	26	1	19	2	79
Total	92	12	105	9	77	9	304

Rows = one-year follow-up

Columns = high school plans

TABLE III - 11(M)3
Eleventh Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - BIOLOGIST

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	19	0	1	4	3	0	27
Mathematics	0	0	0	0	0	0	0
Physical Science	0	0	0	0	1	1	2
Biologist	2	0	0	6	0	1	9
Engineer	0	0	0	0	0	0	0
Math Teacher	0	0	0	0	0	0	0
Science Teacher	0	0	1	1	0	0	2
Other Secondary Teacher	1	0	0	0	0	1	2
Missing Data	8	0	0	5	4	0	17
Total	30	0	2	16	8	3	59

Rows = one-year follow-up

Columns = high school plans

TABLE III - 11(M)4
Eleventh Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - ENGINEER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathematics	Phys. Science	Biologist	Engineer	Secondary Teacher	Total
Other Career Choice	157	5	15	1	143	3	324
Mathematics	0	1	0	0	1	0	2
Physical Science	1	0	16	0	11	0	28
Biologist	0	0	1	0	0	0	1
Engineer	139	15	39	8	427	3	631
Math Teacher	0	0	1	0	1	3	5
Science Teacher	0	0	0	0	0	0	0
Other Secondary Teacher	1	0	0	0	0	0	1
Missing Data	126	11	19	3	189	6	354
Total	424	32	91	12	772	15	1346

Rows = one-year follow-up

Columns = high school plans

TABLE III - 11(M)5
Eleventh Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - MATH TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathematics	Phys. Science	Biologist	Engineer	Secondary Teacher	Total
Other Career Choice	9	4	1	0	7	1	22
Mathematics	1	3	0	0	1	1	6
Physical Science	0	0	1	0	1	0	2
Biologist	0	0	0	0	0	0	0
Engineer	3	0	0	1	3	0	7
Math Teacher	3	3	0	0	8	4	18
Science Teacher	0	0	0	0	0	1	1
Other Secondary Teacher	1	0	0	0	1	1	3
Missing Data	10	3	0	1	6	3	23
Total	27	13	2	2	27	11	82

Rows = one-year follow-up

Columns = high school plans

TABLE III - 11(M)6
Eleventh Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY .. SCIENCE TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	22	0	2	4	6	4	38
Mathematics	0	0	0	0	0	0	0
Physical Science	2	0	3	0	4	0	9
Biologist	2	0	0	1	1	0	4
Engineer	2	0	0	0	4	0	6
Math Teacher	0	0	0	0	0	0	0
Science Teacher	3	0	2	0	3	2	10
Other Secondary Teacher	0	0	0	0	0	1	1
Missing Data	10	0	2	1	2	1	16
Total	41	0	9	6	20	8	84

Rows = one-year follow-up

Columns = high school plans

TABLE III - 11(M)7
Eleventh Grade Males

FIVE-YEAR FOLLOW-UP CATEGORY - OTHER SECONDARY TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	143	3	9	2	31	34	222
Mathematics	1	0	0	0	0	0	1
Physical Science	1	1	3	0	0	0	5
Biologist	0	0	1	0	0	0	1
Engineer	7	1	0	0	8	0	16
Math Teacher	3	0	1	0	2	2	8
Science Teacher	1	0	1	0	0	0	2
Other Secondary Teacher	45	0	2	2	8	26	83
Missing Data	77	3	6	4	14	19	123
Total	278	8	23	8	63	81	461

Rows = one-year follow-up

Columns = high school plans

TWELFTH GRADE MALES

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

Total N = 5081

Number Indicating High School Plans	4039
Number Who Indicated High School Plans Who Remained After Eleven Years	797
Number Who Entered Pool After High School and Dropped Out	522
Number Who Entered Pool After High School and Stayed	520
Total in Pool After Five Years	1317

TABLE III - 12(M)Oa
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - OTHER CAREER CHOICE

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	186	92	227	91	1114	360	2070
Mathematics	7	1	3	1	7	1	20
Physical Science	19	1	31	2	14	1	68
Biologist	9	1	2	3	3	0	18
Engineer	101	6	22	3	175	3	310
Math Teacher	9	2	0	1	12	5	29
Science Teacher	6	0	2	2	6	1	17
Other Secondary Teacher	104	2	5	7	18	52	188
Missing Data	81	46	92	38	610	177	1044
Total	522	151	384	148	1959	600	3764

Rows = five-year follow-up

Columns = high school plans

TABLE III - 12(M)1a
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - MATHEMATICIAN

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	3	1	0	1	2	0	7
Mathematics	1	3	1	0	2	0	7
Physical Science	0	0	0	0	0	0	0
Biologist	0	0	0	0	0	0	0
Engineer	1	0	0	0	0	0	1
Math Teacher	0	0	0	0	0	1	1
Science Teacher	0	0	0	0	0	0	0
Other Secondary Teacher	0	0	0	0	0	0	0
Missing Data	1	2	0	0	0	0	3
Total	6	6	1	1	4	1	19

Rows = five-year follow-up

Columns = high school plans

TABLE III - 12(M)2a
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - PHYSICAL SCIENTIST

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	8	1	6	0	5	1	21
Mathematics	0	0	0	0	0	0	0
Physical Science	17	2	25	0	12	0	56
Biologist	0	0	0	0	0	0	0
Engineer	1	0	0	0	2	0	3
Math Teacher	0	0	0	0	0	0	0
Science Teacher	0	1	0	0	0	0	1
Other Secondary Teacher	0	0	0	0	0	0	0
Missing Data	4	0	5	0	6	0	15
Total	30	4	36	0	25	1	96

Rows = five-year follow-up

Columns = high school plans

TABLE III - 12(M)3a
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - BIOLOGIST

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	3	0	1	1	0	0	5
Mathematics	0	0	0	0	0	0	0
Physical Science	0	0	0	0	1	0	1
Biologist	4	0	1	0	0	0	5
Engineer	0	0	0	0	0	0	0
Math Teacher	0	0	0	0	0	0	0
Science Teacher	2	0	0	0	0	0	2
Other Secondary Teacher	0	0	0	0	0	0	0
Missing Data	3	0	1	0	0	0	4
Total	12	0	3	1	1	0	17

Rows = five-year follow-up

Columns = high school plans

TABLE III - 12(M)4a
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - ENGINEER

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	55	5	3	1	68	1	133
Mathematics	0	2	1	0	1	0	4
Physical Science	4	1	4	0	4	1	14
Biologist	1	0	0	0	0	0	1
Engineer	61	3	12	0	223	2	301
Math Teacher	0	0	1	0	0	0	1
Science Teacher	0	0	0	0	1	0	1
Other Secondary Teacher	1	0	0	0	0	0	1
Missing Data	34	2	6	0	58	1	101
Total	156	13	27	1	355	5	557

Rows = five-year follow-up

Columns = high school plans

TABLE III - 12(M)5a
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - MATH TEACHER

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Mathematics	Phys. Science	Biologist	Engineer	Secondary Teacher	Total
Other Career Choice	2	1	2	0	1	2	8
Mathematics	1	0	0	0	0	0	1
Physical Science	0	0	0	0	0	0	0
Biologist	0	0	0	0	0	0	0
Engineer	0	0	0	0	3	0	3
Math Teacher	1	6	1	0	1	3	12
Science Teacher	0	0	0	0	0	2	2
Other Secondary Teacher	1	1	0	0	1	0	3
Missing Data	0	0	0	0	1	1	2
Total	5	8	3	0	7	8	31

Rows = five-year follow-up

Columns = high school plans

TABLE III - 12(M)6a
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - SCIENCE TEACHER

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

	Other Career Choice	Mathematics	Phys. Science	Biologist	Engineer	Secondary Teacher	Total
Other Career Choice	6	0	2	1	2	1	12
Mathematics	0	0	0	0	0	0	0
Physical Science	0	0	0	0	0	0	0
Biologist	1	0	0	0	0	0	1
Engineer	0	0	0	0	0	0	0
Math Teacher	0	0	0	0	0	0	0
Science Teacher	3	1	0	0	2	0	6
Other Secondary Teacher	0	0	0	0	1	0	1
Missing Data	1	0	0	1	2	3	7
Total	11	1	2	2	7	4	27

Rows = five-year follow-up

Colum.. = high school plans

TABLE III - 12(M)7a
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - OTHER SECONDARY TEACHER

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	38	4	3	1	10	13	69
Mathematics	0	0	0	0	0	0	0
Physical Science	1	0	0	0	0	0	1
Biologist	0	0	0	0	0	0	0
Engineer	0	0	0	0	0	0	0
Math Teacher	1	0	0	0	1	4	6
Science Teacher	1	0	0	1	1	0	3
Other Secondary Teacher	21	0	1	0	5	19	46
Missing Data	29	1	0	0	8	8	46
Total	91	5	4	2	25	44	171

Rows = five-year follow-up

Columns = high school plans

TABLE III - 12(M)8a
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - COLLEGE TEACHER

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Mathe-matics	Phys. Science	Bio-logist	Engi-neer	Secon-dary Teacher	Total
Other Career Choice	146	16	30	8	32	39	271
Mathematics	1	1	1	0	0	1	4
Physical Science	6	1	3	0	0	0	10
Biologist	0	0	0	0	1	0	1
Engineer	5	0	2	0	16	0	23
Math Teacher	2	1	0	1	0	1	5
Science Teacher	1	0	0	0	1	0	2
Other Secondary Teacher	6	0	0	0	4	1	11
Missing Data	42	7	5	3	9	6	72
Total	209	26	41	12	63	48	399

Rows = five-year follow-up

Columns = high school plans

TWELFTH GRADE MALES

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

Total N = 5081

Number Indicating One Year Plans	2596
Number Who Indicated One Year Plans Who Remained After Eleven Years	737
Number Who Entered Pool After One Year and Dropped Out	1905
Number Who Entered Pool After One Year and Stayed	580
Total in Pool After Eleven Years	1317

TABLE III - 12(M)Ob
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - OTHER CAREER CHOICE

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

	Other Career Choice	Mathema-tician	Physical Scientist	Bio-logist	Engi-neer	Math Teacher	Science Teacher	Other Secondary Teacher	Missing Data	Total
Other Career Choice	1161	37	90	18	368	28	14	120	234	2070
Mathema-tician	6	3	1	0	6	0	2	0	3	20
Physical Scientist	22	0	26	0	11	0	1	0	8	68
Biol-ogist	14	0	1	0	1	0	0	0	2	18
Engi-neer	95	0	7	0	168	3	0	1	16	310
Math Teacher	14	1	1	0	6	6	0	1	0	29
Science Teacher	11	0	2	0	1	0	2	1	0	17
Other Secondary Teacher	119	0	2	1	7	3	2	36	18	188
Missing Data	463	13	26	8	170	7	2	45	310	1044
Total	1905	54	156	27	738	47	22	204	611	3764

Rows = five-year follow-up

Columns = one-year follow-up

TABLE III - 12(M)1b
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - MATHEMATICIAN

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

	Other Career Choice	Mathema-tician	Physical Scientist	Bio-logist	Engi-neer	Math Teacher	Science Teacher	Other Secondary Teacher	Missing Data	Total
Other Career Choice	3	2	0	0	1	0	0	0	1	7
Mathema-tician	2	1	2	0	1	0	0	0	1	7
Physical Scientist	0	0	0	0	0	0	0	0	0	0
Biol-ogist	0	0	0	0	0	0	0	0	0	0
Engi-neer	1	0	0	0	0	0	0	0	0	1
Math Teacher	0	0	0	0	0	0	0	1	0	1
Science Teacher	0	0	0	0	0	0	0	0	0	0
Other Secondary Teacher	0	0	0	0	0	0	0	0	0	0
Missing Data	2	0	0	0	0	0	0	0	1	3
Total	8	3	2	0	2	0	0	1	3	19

Rows = five-year follow-up

Columns = one-year follow-up

TABLE III - 12(M)2b
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - PHYSICAL SCIENTIST

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

	Other Career Choice	Mathema-tician	Physical Scientist	Bio-logist	Engi-neer	Math Teacher	Science Teacher	Other Secondary Teacher	Missing Data	Total
Other Career Choice	10	0	7	0	1	0	0	0	3	21
Mathema-tician	0	0	0	0	0	0	0	0	0	0
Physical Scientist	14	1	28	0	6	0	2	0	5	56
Biol-ogist	0	0	0	0	0	0	0	0	0	0
Engi-neer	1	0	0	0	2	0	0	0	0	3
Math Teacher	0	0	0	0	0	0	0	0	0	0
Science Teacher	0	0	0	0	0	0	0	0	1	1
Other Secondary Teacher	0	0	0	0	0	0	0	0	0	0
Missing Data	1	0	5	0	4	0	0	0	5	15
Total	26	1	40	0	13	0	2	0	14	96

Rows = five-year follow-up

Columns = one-year follow-up

TABLE III - 12(M)3b
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - BIOLOGIST

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

	Other Career Choice	Mathema-tician	Physical Scientist	Bio-logist	Engi-neer	Math Teacher	Science Teacher	Other Secondary Teacher	Missing Data	Total
Other Career Choice	4	0	0	1	0	0	0	0	0	5
Mathema-tician	0	0	0	0	0	0	0	0	0	0
Physical Scientist	0	0	1	0	0	0	0	0	0	1
Biol-ogist	3	0	1	0	0	0	1	0	0	5
Engi-neer	0	0	0	0	0	0	0	0	0	0
Math Teacher	0	0	0	0	0	0	0	0	0	0
Science Teacher	2	0	0	0	0	0	0	0	0	2
Other Secondary Teacher	0	0	0	0	0	0	0	0	0	0
Missing Data	2	0	0	0	0	0	0	0	2	4
Total	11	0	2	1	0	0	1	0	2	17

Rows = five-year follow-up

Columns = one-year follow-up

TABLE III - 12(M)4b
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - ENGINEER

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

	Other Career Choice	Mathema-tician	Physical Scientist	Bio-logist	Engi-neer	Math Teacher	Science Teacher	Other Secondary Teacher	Missing Data	Total
Other Career Choice	62	3	5	0	47	0	0	2	14	133
Mathema-tician	0	1	1	0	1	0	0	0	1	4
Physical Scientist	6	0	3	0	2	1	0	0	2	14
Biol-ogist	1	0	0	0	0	0	0	0	0	1
Engi-neer	68	0	8	0	206	0	0	0	19	301
Math Teacher	0	0	0	0	1	0	0	0	0	1
Science Teacher	0	0	0	0	1	0	0	0	0	1
Other Secondary Teacher	0	0	0	0	0	0	0	0	0	1
Missing Data	25	1	5	0	39	0	0	0	31	101
Total	163	5	22	0	297	1	0	2	67	557

Rows = five-year follow-up

Columns = one-year follow-up

TABLE III - 12(M)5b
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - MATH TEACHER

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

	Other Career Choice	Mathema-tician	Physical Scientist	Bio-logist	Engi-neer	Math Teacher	Science Teacher	Other Secondary Teacher	Missing Data	Total
Other Career Choice	2	2	0	0	0	2	0	1	1	8
Mathema-tician	0	1	0	0	0	0	0	0	0	1
Physical Scientist	0	0	0	0	0	0	0	0	0	0
Biol-ogist	0	0	0	0	0	0	0	0	0	0
Engi-neer	1	0	0	0	2	0	0	0	0	3
Math Teacher	5	3	0	0	1	3	0	0	0	12
Science Teacher	1	0	0	0	0	0	0	1	0	2
Other Secondary Teacher	0	1	1	0	1	0	0	0	0	3
Missing Data	2	0	0	0	0	0	0	0	0	2
Total	11	7	1	0	4	5	0	2	1	31

Rows = five-year follow-up

Columns = one-year follow-up.

TABLE III - 12(M)6b
Twelfth Grade MALES

ELEVEN-YEAR FOLLOW-UP CATEGORY - SCIENCE TEACHER

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

	Other Career Choice	Mathema-tician	Physical Scientist	Bio-logist	Engi-neer	Math Teacher	Science Teacher	Other Secondary Teacher	Missing Data	Total
Other Career Choice	6	1	0	0	2	0	0	0	3	12
Mathema-tician	0	0	0	0	0	0	0	0	0	0
Physical Scientist	0	0	0	0	0	0	0	0	0	0
Biol-ogist	0	0	0	0	0	0	0	1	0	1
Engi-neer	0	0	0	0	0	0	0	0	0	0
Math Teacher	0	0	0	0	0	0	0	0	0	0
Science Teacher	5	0	0	0	0	0	0	1	0	6
Other Secondary Teacher	0	0	0	0	1	0	0	0	0	1
Missing Data	1	0	1	0	2	0	1	1	1	7
Total	12	1	1	0	5	0	1	3	4	27

Rows = five-year follow-up

Columns = one-year follow-up

TABLE III - 12(M)7b
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - OTHER SECONDARY TEACHER

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

	Other Career Choice	Mathema-tician	Physical Scientist	Bio-logist	Engi-neer	Math Teacher	Science Teacher	Other Secondary Teacher	Missing Data	Total
Other Career Choice	42	1	1	0	3	1	0	12	9	69
Mathema-tician	0	0	0	0	0	0	0	0	0	0
Physical Scientist	1	0	0	0	0	0	0	0	0	1
Biol-ogist	0	0	0	0	0	0	0	0	0	0
Engi-neer	0	0	0	0	0	0	0	0	0	0
Math Teacher	2	0	0	0	0	1	0	3	0	6
Science Teacher	2	0	0	0	0	0	1	0	0	3
Other Secondary Teacher	24	0	1	0	1	0	1	16	3	46
Missing Data	26	0	1	0	1	1	0	3	14	46
Total	97	1	3	0	5	3	2	34	26	171

Rows = five-year follow-up

Columns = one-year follow-up.

TABLE III - 12(M)8b
Twelfth Grade Males

ELEVEN-YEAR FOLLOW-UP CATEGORY - COLLEGE TEACHER

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

	Other Career Choice	Mathema-tician	Physical Scientist	Bio-logist	Engi-neer	Math Teacher	Science Teacher	Other Secondary Teacher	Missing Data	Total
Other Career Choice	193	8	17	4	18	3	3	7	18	271
Mathema-tician	2	0	0	0	0	0	0	1	1	4
Physical Scientist	3	0	4	0	0	0	0	2	1	10
Biol-ogist	1	0	0	0	0	0	0	0	0	1
Engi-neer	3	0	0	0	15	0	0	1	4	23
Math Teacher	3	1	0	0	0	0	1	0	0	5
Science Teacher	1	0	0	0	1	0	0	0	0	2
Other Secondary Teacher	7	0	0	0	1	0	1	1	1	11
Missing Data	39	4	1	1	4	0	0	6	17	72
Total	252	13	22	5	39	3	5	18	42	399

Rows = five-year follow-up

Columns = one-year follow-up

NINTH GRADE FEMALES

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE YEAR CATEGORY

Total N = 4904

Number Indicating High School Plans	3952
Number Indicating High School Plans Who Remained At Five-Year Level	477
Number Who Entered Pool After High School and Dropped Out	880
Number Who Entered Pool After High School and Stayed	72
Total in Pool After Five Years	549

Tables

TABLE II - 9(F)O
Ninth Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - OTHER CAREER CHOICE

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	223	477	1115	832	2647
Scientist	68	37	15	14	134
Elementary Teacher	492	24	359	86	961
Math Teacher	51	14	29	29	123
Science Teacher	34	24	13	13	74
Missing Data	12	86	189	129	416
Total	880	652	1720	1103	4355

Rows = one-year follow-up
Columns = high school plans

TABLE III - 9(F)1
Ninth Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - SCIENTIST

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	12	3	3	2	20
Scientist	8	8	0	0	16
Elementary Teacher	0	0	0	0	0
Math Teacher	2	0	0	1	3
Science Teacher	0	0	0	0	0
Missing Data	1	0	0	1	2
Total	23	11	3	4	41

Rows = one-year follow-up
Columns = high school plans

TABLE III - 9(F)2
Ninth Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - ELEMENTARY TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	139	12	42	16	209
Scientist	0	0	0	0	0
Elementary Teacher	113	4	62	21	200
Math Teacher	4	1	1	1	7
Science Teacher	1	0	0	1	2
Missing Data	26	1	13	5	45
Total	283	18	118	44	463

Rows = one-year follow-up
Columns = high school plans

TABLE III - 9(F)3
Ninth Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - MATH TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	5	0	1	2	8
Scientist	1	1	0	0	2
Elementary Teacher	0	1	0	0	1
Math Teacher	8	3	7	1	19
Science Teacher	0	0	0	0	0
Missing Data	1	0	0	1	2
Total	15	5	8	4	32

Rows = one-year follow-up

Columns = high school plans

TABLE III - 9(F)4
Ninth Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - SCIENCE TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	4	0	3	1	8
Scientist	2	0	0	0	2
Elementary Teacher	1	0	0	0	1
Math Teacher	0	0	1	0	1
Science Teacher	1	0	0	0	1
Missing Data	0	0	0	0	0
Total	8	0	4	1	13

Rows = one-year follow-up
Columns = high school plans

TENTH GRADE FEMALES

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE YEAR CATEGORY

Total N= 5013

Number Indicating High School Plans	3929
Number Indicating High School Plans Who Remained at Five-Year Level	342
Number Who Entered Pool After High School and Dropped Out	721
Number Who Entered Pool After High School and Stayed	363
Total in Pool After Five Years	705

TABLE III - 10(F)0
Tenth Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - OTHER CAREER CHOICE

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	132	455	975	868	2430
Scientist	54	49	3	16	122
Elementary Teacher	446	32	385	102	965
Math Teacher	38	10	19	58	125
Science Teacher	34	14	10	16	74
Missing Data	17	105	292	178	592
Total	721	665	1684	1238	4308

Rows = one-year follow-up
Columns = high school plans

TABLE III - 10(F)1
Tenth Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - SCIENTIST

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	12	10	3	2	27
Scientist	17	10	2	1	30
Elementary Teacher	0	0	0	0	0
Math Teacher	0	0	1	0	1
Science Teacher	3	1	0	0	4
Missing Data	4	2	0	0	6
Total	36	23	6	3	68

Rows = one-year follow-up
Columns = high school plans

TABLE III - 10(F)2
Tenth Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - ELEMENTARY TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	120	11	43	23	197
Scientist	0	1	0	0	1
Elementary Teacher	131	5	101	41	278
Math Teacher	3	0	1	2	6
Science Teacher	1	1	0	0	2
Missing Data	40	1	25	7	73
Total	295	19	170	73	557

Rows = one-year follow-up
Columns = high school plans

TABLE III - 10(F)3
Tenth Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - MATH TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	5	1	3	4	13
Scientist	1	0	0	0	1
Elementary Teacher	0	0	0	0	0
Math Teacher	10	3	3	11	27
Science Teacher	1	0	0	0	1
Missing Data	1	0	0	1	2
Total	18	4	6	16	44

Rows = one-year follow-up
Columns = high school plans

TABLE III - 10(F)4
Tenth Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - SCIENCE TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	7	1	3	5	16
Scientist	0	2	0	0	2
Elementary Teacher	0	0	0	0	0
Math Teacher	0	0	1	0	1
Science Teacher	6	2	1	4	13
Missing Data	1	2	1	0	4
Total	14	7	6	9	36

Rows = one-year follow-up
Columns = high school plans

ELEVENTH GRADE FEMALES

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE YEAR CATEGORY

Total N = 4982

Number Indicating High School Plans	4015
Number Indicating High School Plans Who Remained at Five-Year Level	518
Number Who Entered Pool After High School and Dropped Out	549
Number Who Entered Pool After High School and Stayed	418
Total in Pool After Five Years	936

TABLE III - 11(F)O
Eleventh Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - OTHER CAREER CHOICE

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	116	318	769	937	2140
Scientist	44	57	6	7	114
Elementary Teacher	297	24	413	89	823
Math Teacher	33	19	9	56	117
Science Teacher	26	10	9	8	53
Missing Data	33	136	343	287	799
Total	549	564	1549	1384	4046

Rows = one-year follow-up
Columns = high school plans

TABLE III - 11(F)1
Eleventh Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - SCIENTIST

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	26	8	0	2	36
Scientist	12	12	0	3	27
Elementary Teacher	0	0	0	0	0
Math Teacher	1	0	1	3	5
Science Teacher	1	0	0	1	2
Missing Data	8	6	1	3	18
Total	48	26	2	12	88

Rows = one-year follow-up
Columns = high school plans

TABLE III - 11(F)2
Eleventh Grade Females
FIVE-YEAR FOLLOW-UP CATEGORY - ELEMENTARY TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	135	7	65	46	253
Scientist	1	0	1	1	3
Elementary Teacher	129	9	168	40	346
Math Teacher	1	2	2	6	11
Science Teacher	0	0	0	0	0
Missing Data	73	5	50	19	147
Total	339	23	286	112	760

Rows = one-year follow-up
Columns = high school plans

TABLE III - 11(F)3
Eleventh Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - MATH TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	5	5	0	3	13
Scientist	2	0	0	1	3
Elementary Teacher	0	0	0	0	0
Math Teacher	3	2	2	15	22
Science Teacher	1	0	0	0	1
Missing Data	4	2	0	2	8
Total	15	9	2	21	47

Rows = one-year follow-up
Columns = high school plans

TABLE III - 11(F)4
Eleventh Grade Females

FIVE-YEAR FOLLOW-UP CATEGORY - SCIENCE TEACHER

HIGH SCHOOL PLANS BY ONE YEAR FOR EACH FIVE-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	10	4	1	1	16
Scientist	2	2	1	0	5
Elementary Teacher	0	0	1	0	1
Math Teacher	0	0	0	0	0
Science Teacher	1	3	1	8	13
Missing Data	3	0	1	2	6
Total	16	9	5	11	41

Rows = one-year follow-up
Columns = high school plans

TWELFTH GRADE FEMALES

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

Total N = 3489

Number Indicating High School Plans	2981
Number Who Indicated High School Plans Who Remained After Eleven Years	336
Number Who Entered Pool after High School and Dropped Out	422
Number Who Entered Pool After High School and Stayed	86
Total in Pool After Five Years	422

Tables

TABLE III - 12(F)Oa
Twelfth Grade Females

ELEVEN-YEAR FOLLOW-UP CATEGORY - OTHER CAREER CHOICE

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	317	195	716	776	2006
Scientist	8	17	3	4	32
Elementary Teacher	8	6	210	48	272
Math Teacher	7	5	4	16	32
Science Teacher	12	3	3	6	24
Missing Data	70	66	314	251	701
Total	422	292	1252	1101	3067

Rows = five-year follow-up
Columns = high school plans

TABLE III - 12(F)1a
Twelfth Grade Females

ELEVEN-YEAR FOLLOW-UP CATEGORY - SCIENTIST

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	6	3	0	2	11
Scientist	3	8	0	0	11
Elementary Teacher	0	0	0	0	0
Math Teacher	0	0	0	0	0
Science Teacher	0	0	0	1	1
Missing Data	2	3	1	0	6
Total	11	14	1	3	29

Rows = five-year follow-up
Columns = high school plans

TABLE III - 12(F)2a
Twelfth Grade Females

ELEVEN-YEAR FOLLOW-UP CATEGORY - ELEMENTARY TEACHER

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	3	1	50	34	88
Scientist	0	0	0	0	0
Elementary Teacher	1	3	83	14	101
Math Teacher	0	0	0	0	0
Science Teacher	0	0	0	1	1
Missing Data	1	2	23	15	41
Total	5	6	156	64	231

Rows = five-year follow-up
Columns = high school plans

TABLE III - 12(F)3a
Twelfth Grade Females

ELEVEN-YEAR FOLLOW-UP CATEGORY - MATH TEACHER

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	1	1	0	8	10
Scientist	0	0	0	0	0
Elementary Teacher	0	0	0	0	0
Math Teacher	5	0	1	12	18
Science Teacher	0	0	0	0	0
Missing Data	2	1	0	1	4
Total	8	2	1	21	32

Rows = five-year follow-up
Columns = high school plans

TABLE III - 12(F\4a
Twelfth Grade Females

ELEVEN-YEAR FOLLOW-UP CATEGORY - SCIENCE TEACHER

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	4	2	1	4	11
Scientist	0	0	0	0	1
Elementary Teacher	0	0	0	0	0
Math Teacher	0	0	0	0	0
Science Teacher	1	0	0	2	3
Missing Data	0	1	0	0	1
Total	5	3	1	7	16

Rows = five-year follow-up
Columns = high school plans

TABLE III - 12(F)5a
Twelfth Grade Females

ELEVEN-YEAR FOLLOW-UP CATEGORY - COLLEGE TEACHER

HIGH SCHOOL PLANS BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Secondary Teacher	Total
Other Career Choice	41	16	9	22	88
Scientist	2	0	0	0	2
Elementary Teacher	1	0	1	1	3
Math Teacher	0	0	0	2	2
Science Teacher	0	0	0	0	0
Missing Data	13	1	1	4	19
Total	57	17	11	29	114

Rows = five-year follow-up
Columns = high school plans

TWELFTH GRADE FEMALES

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN YEAR CATEGORY

Total N = 3489

Number Indicating One Year Plans	1221
Number Who Indicated One Year Plans Who Remained After Eleven Years	212
Number Who Entered Pool After One Year and Dropped Out	2058
Number Who Entered Pool After One Year and Stayed	210
Total in Pool After Eleven Years	212

TABLE III - 12(F)Ob
Twelfth Grade Females

ELEVEN-YEAR FOLLOW-UP CATEGORY - OTHER CAREER CHOICE

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Math Teacher	Science Teacher	Missing Data	Total
Other Career Choice	1467	55	261	40	20	163	2006
Scientist	18	11	0	0	1	2	32
Elementary Teacher	104	1	145	3	1	18	272
Math Teacher	13	3	0	11	2	3	32
Science Teacher	15	0	2	0	5	2	24
Missing Data	441	12	91	7	5	145	701
Total	2058	82	499	61	34	333	3067

Rows = five-year follow-up

Columns = one-year follow-up

TABLE III - 12(F)1b
Twelfth Grade Females

ELEVEN-YEAR FOLLOW-UP CATEGORY - SCIENTIST

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Math Teacher	Science Teacher	Missing Data	Total
Other Career Choice	6	3	0	1	0	1	11
Scientist	4	7	0	0	0	0	11
Elementary Teacher	0	0	0	0	0	0	0
Math Teacher	0	0	0	0	0	0	0
Science Teacher	0	0	0	0	1	0	1
Missing Data	2	3	0	0	0	1	6
Total	12	13	0	1	1	2	29

Rows = five-year follow-up

Columns = one-year follow-up

TABLE III - 12(F)2b
Twelfth Grade Females

ELEVEN-YEAR FOLLOW-UP CATEGORY - ELEMENTARY TEACHER

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Math Teacher	Science Teacher	Missing Data	Total
Other Career Choice	41	1	38	1	1	6	88
Scientist	0	0	0	0	0	0	0
Elementary Teacher	27	1	65	1	0	7	101
Math Teacher	0	0	0	0	0	0	0
Science Teacher	1	0	0	0	0	0	1
Missing Data	21	0	11	1	0	8	41
Total	90	2	114	3	1	21	231

Rows = five-year follow-up

Columns = one-year follow-up

TABLE III - 12(F)3b
Twelfth Grade Females

ELEVEN-YEAR FOLLOW-UP CATEGORY - MATH TEACHER

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Math Teacher	Science Teacher	Missing Data	Total
Other Career Choice	5	1	0	4	0	0	10
Scientist	0	0	0	0	0	0	0
Elementary Teacher	0	0	0	0	0	0	0
Math Teacher	7	1	0	10	0	0	18
Science Teacher	0	0	0	0	0	0	0
Missing Data	1	0	0	1	0	2	4
Total	13	2	0	15	0	2	32

Rows = five-year follow-up

Columns = one-year follow-up

TABLE III - 12(F)4b
Twelfth Grade Females

ELEVEN-YEAR FOLLOW-UP CATEGORY - SCIENCE TEACHER

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Math Teacher	Science Teacher	Missing Data	Total
Other Career Choice	6	1	0	1	2	3	11
Scientist	1	0	0	0	0	0	1
Elementary Teacher	0	0	0	0	0	0	0
Math Teacher	0	0	0	0	0	0	0
Science Teacher	2	0	0	0	1	0	3
Missing Data	0	1	0	0	0	0	1
Total	9	2	0	1	3	1	16

Rows = five-year follow-up

Columns = one-year follow-up

TABLE III - 12(F)5b
Twelfth Grade Females

ELEVEN-YEAR FOLLOW-UP CATEGORY - COLLEGE TEACHER

ONE YEAR BY FIVE YEAR FOR EACH ELEVEN-YEAR CATEGORY

	Other Career Choice	Scientist	Elementary Teacher	Math Teacher	Science Teacher	Missing Data	Total
Other Career Choice	70	5	3	1	2	7	88
Scientist	2	0	0	0	0	0	2
Elementary Teacher	2	0	1	0	0	0	3
Math Teacher	0	0	0	2	0	0	2
Science Teacher	0	0	0	0	0	0	0
Missing Data	12	0	0	0	0	7	19
Total	86	5	4	3	2	14	114

Rows = five-year follow-up

Columns = one-year follow-up

Summary

In this chapter the basic data for the career patterns of males and females for grades nine, ten, eleven and twelve were presented. The data is organized around career categories formed from follow-up information provided by the individuals. For grades nine, ten and eleven, these include high school plans one-year follow-up plans and five-year career choice. For twelfth grades eleven-year follow-up data was available and was used in forming the career groups.

There are a variety of ways to examine and interpret this data. Two areas which seem of prime interest are (1) career group composition, that is what career patterns are followed by individuals who compose each career group; and (2) career stability which involves tracing career paths through all of the levels to determine the degree of stability of interest and career choice. These two elements of career pattern research will be explored in Chapters IV and V.

CHAPTER IV

CAREER GROUP COMPOSITION IN RELATION TO CAREER PLANS

In the earlier stages of this research interest, I used to ask groups of science teachers with whom I was working, "How many of you began your college careers with science teaching as your career goal?" Quite often there would be none and usually only one or two at most. In one survey conducted it was estimated that 96 per cent of the secondary science teachers began college with other career goals in mind. This follows the career pattern theory for science teachers discussed in Chapter I. The question then becomes, where do the individuals come from who compose the science teaching group? The same question could be asked of all the other career groups.

Individuals change their career plans as they go through the educational process. The major question to be examined in this chapter is: Where do the individuals come from in terms of career plans, who eventually end up in a particular career group? To answer this question it is necessary to backtrack or follow back the individuals in a particular career group to establish their previous career plans. This follow-back procedure has been done utilizing the data presented in Chapter III. For grades 9, 10 and 11 this procedure involves using the five-year follow-up group composition and backtracking to their one-year follow-up plans and their high school career plans.

For example, using 9th grade males, one can examine the previous career plans of the 45 individuals who indicated a career choice of Mathematics on their five-year follow-up study. Table IV - 9(M)1 shows the results of the comparison of five-year career choice to high school plans and Table IV - 9(M)2 shows the comparison against one-year follow-up plans. Looking at the Mathematics group on Table IV - 9(M)1, it can be seen that of the 45 individuals who ended up in Mathematics, 20 came from other occupational choices (that is, they did

not indicate an interest in mathematics as a career in high school); 8 were consistent in that they did indicate an interest in becoming mathematicians in high school at the 9th grade level; 4 came from Physical Sciences; 1 from Biology; 12 from Engineering; and none from Other Secondary Teaching.

In examining Tables IV - 9(M)2 which shows the Mathematics career group composition as related to one-year follow-up career plans, the pattern is changed somewhat. In this analysis there were 17 who did not indicate one-year plans in any of the selected career groups; 10 who planned on being Mathematicians; 2 from Physical Science; 0 from Biology; 9 from Engineering; 3 from Mathematics Teaching; 0 from Science Teaching and other Secondary Teaching, and 4 on whom data was not available.

Each career group composition for both males and females at each grade level is similarly presented. For the twelfth grade population there are three tables showing high school, one-year and five-year follow-up plans in relation to the career group composition on the eleven-year follow-up study.

The data for males is presented as follows:

The data for female career goups is presented as follows:

TABLE IV - 9(M)1
Ninth Grade Males

CAPEEP GROUP COMPOSITION OF FIVE-YEAR FOLLOW-UP
IN RELATION TO HIGH SCHOOL CAREER PLANS

5-year Follow-Up		High School Plans
Mathematician (N = 45)	←	75 OC 8 M 4 PS 1 B 12 E 0 OST
Physical Scientist (N = 189)	←	80 OC 5 M 46 PS 8 B 47 E 3 OST
Biologist (N = 41)	←	21 OC 2 M 5 PS 8 B 4 E 1 OST
Engineer (N = 1,077)	←	485 OC 22 M 91 PS 26 B 445 E 8 OST
Mathematics Teacher (N = 35)	←	19 OC 2 M 0 PS 0 B 10 E 4 OST
Science Teacher (N = 24)	←	13 OC 1 M 0 PS 3 B 4 E 3 OST
Other Secondary Teacher (N = 309)	←	216 OC 7 M 13 PS 5 B 40 E 28 OST

KEY: OC = Other Career Choice; M = Mathematician; PS = Physical Scientist
B = Biologist; E = Engineer; OST = Other Secondary Teacher

TABLE IV - 9(M)2
Ninth Grade Males

CAREER GROUP COMPOSITION OF FIVE-YEAR FOLLOW-UP
IN RELATION TO ONE-YEAR FOLLOW-UP

5-Year Follow-Up		1-Year Follow-Up Plans
Mathematician (N = 45)	←	17 OC 10 M 2 PS 0 B 9 E 3 MT 0 ST 0 OST 4 No Data
Physical Scientist (N = 189)	←	66 OC 1 M 79 PS 1 B 24 E 1 MT 1 ST 0 OST 16 No Data
Biologist (N = 41)	←	26 OC 0 M 2 PS 5 B 1 E 0 MT 3 ST 0 OST 4 No Data
Engineer (N = 1,077)	←	356 OC 2 M 21 PS 0 B 561 E 2 MT 0 ST 4 OST 131 No Data
Math Teacher (N = 35)	←	15 OC 0 M 1 PS 0 B 4 E 8 MT 0 ST 2 OST 5 No Data

Science Teacher (N = 24) ←

13 OC
0 M
2 PS
3 B
0 B
0 E
1 MT
5 ST
0 OST
0 No Data

Other Secondary Teacher (N = 309) ←

172 OC
1 M
1 PS
1 B
8 E
4 MT
3 ST
69 OST
50 No Data

KEY:

OC = Other Career Choice
M = Mathematician
PS = Physical Scientist
B = Biologist
E = Engineer
MT = Math Teacher
ST = Science Teacher
OST = Other Secondary Teacher

TABLE IV - 10(M)1
Tenth Grade Males

CAREER GROUP COMPOSITION OF FIVE-YEAR FOLLOW-UP
IN RELATION TO HIGH SCHOOL CAREER PLANS

5-Year Follow-Up	High School Plans
Mathematician (N = 63) ←	28 OC 8 M 9 PS 0 B 16 E 2 OST
Physical Scientist (N = 262) ←	79 OC 12 M 78 PS 11 B 78 E 4 OST
Biologist (N = 58) ←	30 OC 0 M 5 PS 12 B 9 E 2 OST
Engineer (N = 1,255) ←	493 OC 31 M 90 PS 26 B 599 E 16 OST
Math Teacher (N = 48) ←	17 OC 6 M 5 PS 0 B 15 E 5 OST
Science Teacher (N = 61) ←	25 OC 4 B 4 PS 11 B 12 E 5 OST
Other Secondary Teacher (N = 415) ←	258 OC 5 M 16 PS 17 B 59 E 60 OST

KEY: OC = Other Career Choice; M = Mathematician; PS = Physical Scientist
B = Biologist; E = Engineer; OST = Other Secondary Teacher

TABLE IV - 10(M)2
Tenth Grade Males

CAREER GROUP COMPOSITION OF FIVE-YEAR FOLLOW-UP
IN RELATION TO ONE-YEAR FOLLOW-UP

5-Year Follow-Up		1-Year Follow-Up Plans
Mathematician (N = 63)	←	21 OC 21 M 4 PS 0 B 3 E 6 MT 0 ST 0 OST 8 No Data
Physical Scientist (N = 262)	←	62 OC 5 M 132 PS 1 B 19 E 0 MT 6 ST 1 OST 36 No Data
Biologist (N = 58)	←	34 OC 0 M 2 PS 12 B 0 E 0 MT 0 ST 2 OST 8 No Data
Engineer (N = 1,255)	←	317 OC 3 M 32 PS 0 B 679 E 3 MT 3 ST 5 OST 213 No Data
Math Teacher (N = 48)	←	17 OC 5 M 1 PS 0 B 6 E 11 MT 0 ST 2 OST 6 No Data

Science Teacher (N = 61) ←

23 OC
1 M
6 PS
3 B
1 E
3 MT
15 ST
2 OST
7 No Data

Other Secondary Teacher (N = 415) ←

180 OC
0 M
0 PS
0 B
8 E
8 MT
4 ST
140 OST
75 No Data

KEY:

OC = Other Career Choice
M = Mathematician
PS = Physical Scientist
B = Biologist
E = Engineer
MT = Math Teacher
ST = Science Teacher
OST = Other Secondary Teacher

TABLE IV - 11(M)1
Eleventh Grade Males

CAREER GROUP COMPOSITION OF FIVE-YEAR FOLLOW-UP
IN RELATION TO HIGH SCHOOL CAREER PLANS

5-Year Follow-Up		High School Plans
Mathematician (N - 66)	←	27 OC 10 M 11 PS 0 B 16 E 2 ST
Physical Scientist (N = 304)	←	92 OC 12 M 105 PS 9 B 77 E 9 ST
Biologist (N = 59)	←	30 OC 0 M 2 PS 16 B 8 E 3 ST
Engineer (N = 1,346)	←	424 OC 32 M 91 PS 12 B 772 E 15 ST
Math Teacher (N = 82)	←	27 OC 13 M 2 PS 2 B 27 E 11 ST
Science Teacher (N = 84)	←	41 OC 0 M 9 PS 6 B 20 E 8 ST
Other Secondary Teacher (N = 461)	←	278 OC 8 M 23 PS 8 B 63 E 81 ST

KEY: OC = Other Career Choice; M = Mathematician; PS = Physical Scientist;
B = Biologist; E = Engineer; ST = Science Teacher

TABLE IV - 11(M)2
Eleventh Grade Males

CAREER GROUP COMPOSITION OF FIVE-YEAR FOLLOW-UP
IN RELATION TO ONE-YEAR FOLLOW-UP

5-Year Follow-Up		1-Year Follow-Up Plans
Mathematician (N = 66)	←	21 OC 10 M 3 PS 0 B 6 E 2 MT 0 ST 0 OST 24 No Data
Physical Scientist (N = 304)	←	86 OC 8 M 105 PS 0 B 21 E 2 MT 2 ST 1 OST 79 No Data
Biologist (N = 59)	←	27 OC 0 M 2 PS 9 B 0 E 0 MT 2 ST 2 OST 17 No Data
Engineer (N = 1,346)	←	324 OC 2 M 28 PS 1 B 631 E 5 MT 0 ST 1 OST 354 No Data
Math Teacher (N = 82)	←	22 OC 6 M 2 PS 0 B 7 E 18 MT 1 ST 3 OST 23 No Data

Science Teacher (N = 84) ←

38 OC
0 M
9 PS
4 B
6 E
0 MT
10 ST
1 OST
16 No Data

Other Secondary Teacher (N = 461) ←

222 OC
1 M
5 PS
1 B
16 E
8 MT
2 ST
83 OST
123 No Data

KEY:

OC = Other Career Choice
M = Mathematician
PS = Physical Scientist
B = Biologist
E = Engineer
MT = Math Teacher
ST = Science Teacher
OST = Other Secondary Teacher

TABLE IV - 12(M)1
Twelfth Grade Males

CAREER GROUP COMPOSITION OF ELEVEN-YEAR FOLLOW-UP
IN RELATION TO HIGH SCHOOL PLANS

11-Year Follow-Up		High School Plans
Mathematician (N = 19)	←	6 OC 6 M 1 PS 1 B 4 E 1 OST
Physical Scientist (N = 96)	←	30 OC 4 M 36 PS 0 B 25 E 1 OST
Biologist (N = 17)	←	12 OC 0 M 3 PS 1 B 1 E 0 OST
Engineer (N = 557)	←	156 OC 13 M 27 PS 1 B 355 E 5 OST
Math Teacher (N = 31)	←	5 OC 8 M 3 PS 0 B 7 E 8 OST
Science Teacher (N = 27)	←	11 OC 1 M 2 PS 2 B 7 E 4 OST

Other Secondary Teacher (N = 171) ←

91 OC
5 M
4 PS
2 B
25 E
44 OST

College Teacher (N = 399) ←

209 OC
26 M
41 PS
12 B
63 E
48 OST

KEY:

OC = Other Career Choice
M = Mathematician
PS = Physical Scientist
E = Engineer
OST = Other Secondary Teacher

TABLE IV - 12(M)2
Twelfth Grade Males

CAREER GROUP COMPOSITION OF ELEVEN-YEAR FOLLOW-UP
IN RELATION TO ONE-YEAR PLANS

11-Year Follow-Up		1-Year Plans
Mathematician (N = 19)	←	8 OC 3 M 2 PS 0 B 2 E 0 MT 0 ST 1 OST 3 No Data
Physical Science (N = 96)	←	26 OC 1 M 40 PS 0 B 13 E 0 MT 2 ST 0 OST 14 No Data
Biologist (N = 17)	←	11 OC 0 M 2 PS 1 B 0 E 0 MT 1 ST 0 OST 2 No Data
Engineer (N = 557)	←	163 OC 5 M 22 PS 0 B 297 E 1 MT 0 ST 2 OST 67 No Data

Math Teacher (N = 31)	←	11 OC 7 M 1 PS 0 B 4 E 5 MT 0 ST 2 OST 1 No Data
Science Teacher (N = 27)	←	12 OC 1 M 1 PS 0 B 5 E 0 MT 1 ST 3 OST 4 No Data
Other Secondary Teacher (N = 171)	←	97 OC 1 M 3 PS 0 B 5 E 3 MT 2 ST 34 OST 26 No Data
College Teacher (N = 399)	←	252 OC 13 M 22 PS 5 B 39 E 3 MT 5 ST 18 OST 42 No Data

KEY:

OC = Other Career Choice
M = Mathematician
E = Engineer
ST = Science Teacher
PS = Physical Scientist
B = Biologist
MT = Math Teacher
OST = Other Secondary Teacher

TABLE IV - 12(M)3
Twelfth Grade Males

CAREER GROUP COMPOSITION OF ELEVEN-YEAR FOLLOW-UP
IN RELATION TO FIVE-YEAR PLANS

11-Year Follow-Up		5-Year Plans
Mathematician (N = 19)	←	7 OC 7 M 0 PS 0 B 1 E 1 MT 0 ST 0 OST 3 No Data
Physical Scientist (N = 96)	←	21 OC 0 M 56 PS 0 B 3 E 0 MT 1 ST 0 OST 15 No Data
Biologist (N = 17)	←	5 OC 0 M 1 PS 5 B 0 E 0 MT 2 ST 0 OST 4 No Data
Engineer (N = 557)	←	133 OC 4 M 14 PS 1 B 301 E 1 MT 1 ST 1 OST 101 No Data

Math Teacher (N = 31)	←	8 OC 1 M 0 PS 0 B 3 E 12 MT 2 ST 3 OST 2 No Data
Science Teacher (N = 27)	←	12 OC 0 M 0 PS 1 B 0 E 0 MT 6 ST 1 OST 7 No Data
Other Secondary Teacher (N = 171)	←	69 OC 0 M 1 PS 0 B 0 E 6 MT 3 ST 46 OST 46 No Data
College Teacher (N = 399)	←	271 OC 4 M 10 PS 1 B 23 E 5 MT 2 ST 11 OST 72 No Data

KEY:

OC = Other Career Choice
M = Mathematician
PS = Physical Scientist
B = Biologist
E = Engineer
MT = Math Teacher
ST = Science Teacher
OST = Other Secondary Teacher

TABLE IV - 9(F)1
Ninth Grade Females

CAREER GROUP COMPOSITION OF FIVE-YEAR FOLLOW-UP
IN RELATION TO HIGH SCHOOL CAREER PLANS

5-Year Follow-Up		High School Plans
Scientist (N = 41)	←	23 OC 11 S 3 ET 4 ST
Elementary Teacher (N = 45)	←	26 OC 1 S 13 ET 5 ST
Math Teacher (N = 32)	←	15 OC 5 S 8 ET 4 ST
Science Teacher (N = 13)	←	8 OC 0 S 4 ET 1 ST

KEY:

OC = Other Career Choice
S = Scientist
ET = Elementary Teacher
ST = Secondary Teacher

TABLE IV - 9(F)2
Ninth Grade Females

CAREER GROUP COMPOSITION OF FIVE-YEAR FOLLOW-UP
IN RELATION TO ONE-YEAR FOLLOW-UP

5-Year Follow-Up		1-Year Follow-Up Plans
Scientist (N = 41)	←	20 OC 16 S 0 ET 3 MT 0 ST 2 No Data
Elementary Teacher (N = 45)	←	209 OC 0 S 200 ET 7 MT 2 ST 45 No Data
Math Teacher (N = 32)	←	8 OC 2 S 1 ET 19 MT 0 ST 2 No Data
Science Teacher (N = 13)	←	8 OC 2 S 1 ET 1 MT 1 ST 0 No Data

KEY:

OC = Other Career Choice
S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher

TABLE IV - 10(F)1
Tenth Grade Females

CAREER GROUP COMPOSITION OF FIVE-YEAR FOLLOW-UP
IN RELATION TO HIGH SCHOOL CAREER PLANS

5-Year Follow-Up		High School Plans
Scientist (N = 68)	←	36 OC 23 S 6 ET 3 OST
Elementary Teacher (N = 557)	←	295 OC 19 S 170 ET 73 OST
Math Teacher (N = 44)	←	18 OC 4 S 6 ET 16 OST
Science Teacher (N = 36)	←	14 OC 7 S 6 ET 9 OST

KEY:

OC = Other Career Choice
S = Scientist
ET = Elementary Teacher
OST = Other Secondary Teacher

TABLE IV - 10(F)2
Tenth Grade Females

CAREER GROUP COMPOSITION OF FIVE-YEAR FOLLOW-UP
IN RELATION TO ONE-YEAR FOLLOW-UP

5-Year Follow-Up		1-Year Follow-Up Plans
Scientist (N = 68)	←	27 OC 30 S 0 ET 1 MT 4 ST 6 No Data
Elementary Teacher (N = 557)	←	197 OC 1 S 278 ET 6 MT 2 ST 73 No Data
Math Teacher (N = 44)	←	13 OC 1 S 0 ET 27 MT 1 ST 2 No Data
Science Teacher (N = 36)	←	16 OC 2 S 0 ET 1 MT 13 ST 4 No Data

KEY:

OC = Other Career Choice
S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher

TABLE IV - 11(F)1
Eleventh Grade Females

CAREER GROUP COMPOSITION OF FIVE-YEAR FOLLOW-UP
IN RELATION TO HIGH SCHOOL CAREER PLANS

5-Year Follow-Up		High School Plans
Scientist (N = 88)	←	48 OC 26 S 2 ET 12 OST
Elementary Teacher (N = 760)	←	339 OC 23 S 286 ET 112 OST
Math Teacher (N = 47)	←	15 OC 9 S 2 ET 21 OST
Science Teacher (N = 41)	←	16 OC 9 S 5 ET 11 OST

KEY:

OC = Other Career Choice
S = Scientist
ET = Elementary Teacher
OST = Other Secondary Teacher

TABLE IV - 11(F)2
Eleventh Grade Females

CAREER GROUP COMPOSITION OF FIVE-YEAR FOLLOW-UP
IN RELATION TO ONE-YEAR FOLLOW-UP

5-Year Follow-Up		1-Year Follow-Up Plans
Scientist (N = 88)	←	36 OC 27 S 0 ET 5 MT 2 ST 18 No Data
Elementary Teacher (N = 760)	←	253 OC 3 S 346 ET 11 MT 0 ST 147 No Data
Math Teacher (N = 47)	←	13 OC 3 S 0 ET 22 MT 1 ST 8 No Data
Science Teacher (N = 41)	←	16 OC 5 S 1 ET 0 MT 13 ST 6 No Data

KEY:

OC = Other Career Choice
S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher

TABLE IV - 12(F)1
Twelfth Grade Females

CAREER GROUP COMPOSITION OF ELEVEN-YEAR FOLLOW-UP
IN RELATION TO HIGH SCHOOL PLANS

11-Year Follow-Up		High School Plans
Scientist (N = 29)	←	11 OC 14 S 1 ET 3 OST
Elementary Teacher (N = 231)	←	5 OC 6 S 156 ET 64 OST
Math Teacher (N = 32)	←	8 OC 2 S 1 ET 21 OST
Science Teacher (N = 16)	←	5 OC 3 S 1 ET 7 OST
College Teacher (N = 114)	←	57 OC 17 S 11 ET 29 OST

KEY:

OC = Other Career Choice
S = Scientist
ET = Elementary Teacher
OST = Other Secondary Teacher

TABLE IV - 12(F)2
Twelfth Grade Females

CAREER GROUP COMPOSITION OF ELEVEN-YEAR FOLLOW-UP
IN RELATION TO ONE-YEAR PLANS

11-Year Follow-Up		1-Year Follow-Up Plans
Scientist (N = 29)	←	12 OC 13 S 0 ET 1 MT 1 ST 2 No Data
Elementary Teacher (N = 231)	←	90 OC 2 S 114 ET 3 MT 1 ST 21 No Data
Math Teacher (N = 32)	←	13 OC 2 S 0 ET 15 MT 0 ST 2 No Data
Science Teacher (N = 16)	←	9 OC 2 S 0 ET 1 MT 3 ST 1 No Data
College Teacher (N = 114)	←	86 OC 5 S 4 ET 3 MT 2 ST 14 No Data

KEY:

OC = Other Career Choice
S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher

TABLE IV - 12(F)3
Twelfth Grade Females

CAREER GROUP COMPOSITION OF ELEVEN-YEAR FOLLOW-UP
IN RELATION TO FIVE-YEAR PLANS

11-Year Follow-Up		5-Year Plans
Scientist (N = 29)	←	11 OC 11 S 0 ET 0 MT 1 ST 6 No Data
Elementary Teacher (N = 231)	←	88 OC 0 S 101 ET 0 MT 1 ST 41 No Data
Math Teacher (N = 32)	←	10 OC 0 S 0 ET 18 MT 0 ST 4 No Data
Science Teacher (N = 16)	←	11 OC 1 S 0 ET 0 MT 3 ST 1 No Data
College Teacher (N = 114)	←	88 OC 2 S 3 ET 2 MT 0 ST 19 No Data

KEY:

OC = Other Career Choice
S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher

CHAPTER V

STABILITY OF CAREER PATTERNS

One of the more interesting aspects of career pattern research is to examine the stability of career plans over time. The nature of the American educational system allows for a great deal of flexibility in career decisions and indications seem to be that this flexibility is well exercised. In one sense this is commendable, in that an individual may within certain constraints, change his career plans several times during his formal educational years as new interests and opportunities arise. On the other hand it proves to be somewhat troublesome for those charged with the responsibility for providing the educational opportunities and accompanying curricular and financial commitments necessary to accommodate this changing flow of students. It makes prediction of future needs in terms of faculty, facilities, curricula, etc., a most difficult process.

The degree of stability of career plans shows great variance across career fields. Some career fields exhibit a much greater degree of stability than others. In some careers the commitment seems to be made quite early, with an accompanying tenacity of goals, while in other careers, decision often is made quite late and seems to be the result of a searching or scanning until the individual finds a career compatible with his own personality and perceptions.

Another factor that may be operating in career stability is a lack of a clear understanding of career roles, or occupation realism. Quite often a career choice may be stated in high school, when the individual has no realistic expectations of what is involved in that particular career, either in terms of the prerequisite knowledge and skills to enter that field or in the nature of the job such a career implies. This lack of occupational awareness also seems to

vary, somewhat, across occupation, and an individual may think he desires a career for which he has neither the talent nor the temperament and it is not until some later date when he is brought face to face with the reality that a different career choice must be made.

The data for examining career stability is presented in this chapter for all grade levels and for males and females. The tables show the relationships between one-year plans and five-year follow-up choice and between one-year plans and five-year career choice for grades 9, 10 and 11. For grade 12 the eleven-year follow-up career grouping is compared to high school, one-year and five-year data. For example, looking at Table V-9(M)1 on ninth grade males in the category of Mathematics, a total of 319 indicated high school plans to become mathematicians. Two hundred seventy-two dropped out of this career group by the time of the five-year follow-up study; of the 47 left, 8 entered Mathematics; 5 went into Physical Science; 2 into Biology; 22 into Engineering; 2 into Mathematics Teaching; 1 into Science Teaching; and 7 into Other Secondary Teaching.

The data for males is presented in the tables listed below:

The data for females is presented in the tables listed below:

TABLE V - 9(M)1
Ninth Grade Males

A COMPARISON OF HIGH SCHOOL CAREER PLANS AND FIVE-YEAR CAREER CHOICE

High School Plans		5-Year Choice
Mathematician (N = 319) 272 out of pool	→	8 M 5 PS 2 B 22 E 2 MT 1 ST 0 OST 47
Physical Scientist (N = 848) 701 out of pool	→	4 M 46 PS 5 B 91 E 0 MT 0 ST 13 OST 147
Biologist (N = 417) 366 out of pool	→	1 M 8 PS 8 B 26 E 0 MT 3 ST 5 OST 51
Engineer (N = 3,334) 2,772 out of pool	→	12 M 47 PS 4 B 445 E 10 MT 4 ST 40 OST 562

Other Secondary Teacher (N = 446)
399 out of pool

0	M
3	PS
1	B
8	E
4	MT
3	ST
28	OST
47	

KEY:

M = Mathematician
PS = Physical Scientist
B = Biologist
E = Engineer
MT = Math Teacher
ST = Science Teacher
OST = Other Secondary Teacher

TABLE V - 9(M)2
Ninth Grade Males

A COMPARISON OF ONE-YEAR PLANS AND FIVE-YEAR CAREER CHOICE

1-Year Plans		5-Year Choice
Mathematician (N = 85) 71 out of pool	→	10 M 1 PS 0 B 2 E 0 MT 0 ST 0 OST 14
Physical Scientist (N = 330) 222 out of pool	→	2 M 79 PS 2 B 21 E 1 MT 2 ST 0 OST 108
Biologist (N = 75) 65 out of pool	→	0 M 1 PS 5 B 0 E 0 MT 3 ST 1 OST 10
Engineer (N = 1,397)	→	9 M 24 PS 1 B 561 E 4 MT 0 ST 8 OST 607

Math Teacher (N = 94)
75 out of pool

3 M
1 PS
0 B
2 E
8 MT
1 ST
4 OST
19

Science Teacher (N = 60)
48 out of pool

0 M
1 PS
3 B
0 E
0 MT
5 ST
3 OST
12

Other Secondary Teacher (N = 443)
368 out of pool

0 M
0 PS
0 B
4 E
2 MT
0 ST
69 OST
75

KEY:

M = Mathematician
PS = Physical Scientist
B = Biologist
E = Engineer
MT = Math Teacher
ST = Science Teacher
OST = Other Secondary Teacher

TABLE V - 10(M)1
Tenth Grade Males

A COMPARISON OF HIGH SCHOOL CAREER PLANS AND FIVE-YEAR CAREER CHOICE

High School Plans		5-Year Choice
Mathematician (N = 331) 265 out of pool	→	3 M 12 PS 0 B 31 E 6 MT 4 ST 0 OST 66
Physical Scientist (N = 813) 606 out of pool	→	9 M 78 PS 5 B 90 E 5 MT 4 ST 16 OST 207
Biologist (N = 567) 490 out of pool	→	0 M 11 PS 12 B 26 E 0 MT 11 ST 17 OST 77
Engineer (N = 3,780) 2,992 out of pool	→	16 M 78 PS 9 B 599 E 15 MT 12 ST 59 OST 788

Other Secondary Teacher (N = 645)
551 out of pool

2 M
4 PS
2 B
16 E
5 MT
5 ST
60 OST
94

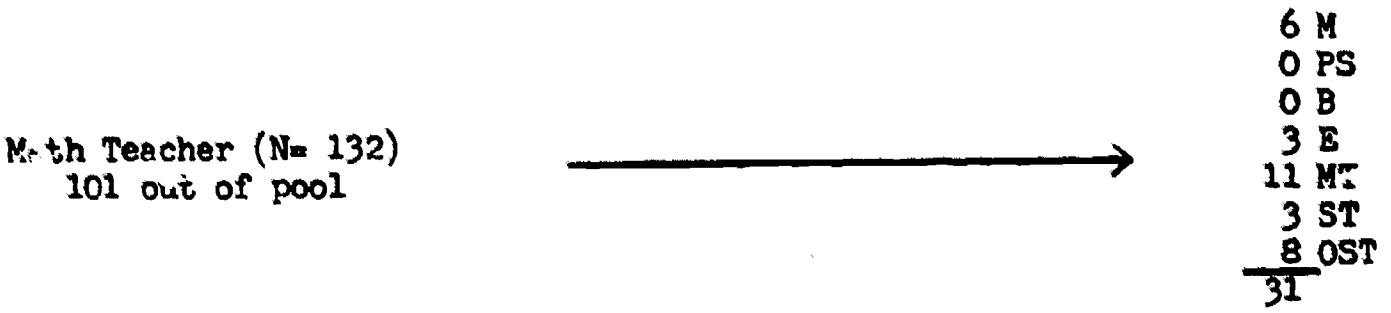
KEY:

M = Mathematician
PS = Physical Scientist
B = Biologist
E = Engineer
MT = Math Teacher
ST = Science Teacher
OST = Other Secondary Teacher

TABLE V - 10(M)2
Tenth Grade Males

A COMPARISON OF ONE-YEAR PLANS AND FIVE-YEAR CAREER CHOICE

1-Year Plans		5-Year Choice
Mathematician (N = 100) 65 out of pool	→	21 M 5 PS 0 B 3 E 5 MT 1 ST 0 OST 35
Physical Scientist (N = 352) 175 out of pool	→	4 M 132 PS 2 B 32 E 1 MT 6 ST 0 OST 177
Biologist (N = 69)	→	0 M 1 PS 12 B 0 E 0 MT 3 ST 0 OST 16
Engineer (N = 1,366) 650 out of pool	→	3 M 19 PS 0 B 679 E 6 MT 1 ST 8 OST 716



KEY:

M = Mathematician
PS = Physical Scientist
B = Biologist
E = Engineer
MT = Math Teacher
ST = Science Teacher
OST = Other Secondary Teacher

TABLE V - 11(M) 1
Eleventh Grade Males

A COMPARISON OF HIGH SCHOOL CAREER PLANS AND FIVE-YEAR CAREER CHOICE

High School Plans		5-Year Choice
Mathematician (N = 327) 252 out of pool	→	10 M 12 PS 0 B 32 E 13 MT 0 ST 8 OST 75
Physical Scientist (N = 781) 538 out of pool	→	11 M 105 PS 2 B 91 E 2 MT 9 ST 23 OST 243
Biologist (N = 351) 298 out of pool	→	0 M 9 PS 16 B 12 E 2 MT 6 ST 8 OST 53
Engineer (N = 3,630) 2,647 out of pool	→	16 M 77 PS 8 B 772 E 27 MT 20 ST 63 OST 983

Other Secondary Teacher (N = 759)
630 out of pool

2 M
9 PS
3 B
15 E
11 MT
8 ST
81 OST
129

KEY:

M = Mathematician
PS = Physical Scientist
B = Biologist
E = Engineer
MT = Math Teacher
ST = Science Teacher
OST = Other Secondary Teacher

TABLE V - 11 (M)2
Eleventh Grade Males

A COMPARISON OF ONE-YEAR PLANS AND FIVE-YEAR CAREER CHOICE

1-Year Plans		5-Year Choice
Mathematician (N = 91) 64 out of pool	→	10 M 8 PS 0 B 2 E 6 MT 0 ST 1 OST 27
Physical Scientist (N = 343) 189 out of pool	→	3 M 105 PS 2 B 28 E 2 MT 9 ST 5 OST 154
Biologist (N = 57) 42 out of pool	→	0 M 0 PS 9 B 1 E 0 MT 4 ST 1 OST 15
Engineer (N = 1,331) 644 out of pool	→	6 M 21 PS 0 B 631 E 7 MT 6 ST 16 OST 687

Math Teacher (N = 87)
52 out of pool

2 M
2 PS
0 B
5 E
18 MT
0 ST
8 OST
35

Science Teacher (N = 81)
64 out of pool

0 M
2 PS
2 B
0 E
1 MT
10 ST
2 OST
17

Other Secondary Teacher (N = 401)
310 out of pool

0 M
1 PS
2 B
1 E
3 MT
1 ST
83 OST
91

KEY:

M = Mathematician
PS = Physical Scientist
B = Biologist
E = Engineer
MT = Math Teacher
ST = Science Teacher
OST = Other Secondary Teacher

TABLE V - 12(M) 1
Twelfth Grade Males

A COMPARISON OF HIGH SCHOOL PLANS AND ELEVEN-YEAR CAREER CHOICE

High School Plans		11-Year Choice
Mathematician (N = 214) 151 out of pool	→	6 M 4 PS 0 B 13 E 8 MT 1 ST 5 OST 26 CT 63
Physical Scientist (N = 501) 384 out of pool	→	1 M 36 PS 3 B 27 E 3 MT 2 ST 4 OST 41 CT 117
Biologist (N = 167) 148 out of pool	→	1 M 0 PS 1 B 1 E 0 MT 2 ST 2 OST 12 CT 19
Engineer (N = 2,446) 1,959 out of pool	→	4 M 25 PS 1 B 355 E 7 MT 7 ST 25 OST 63 CT 487

Other Secondary Teacher (N = 711)
600 out of pool

1	M
1	PS
0	B
5	E
8	MT
4	ST
44	OST
48	CT
111	

KEY:

M = Mathematician
PS = Physical Scientist
B = Biologist
E = Engineer
MT = Math Teacher
ST = Science Teacher
OST = Other Secondary Teacher
CT = College Teacher

TABLE V - 12 (M)2
Twelfth Grade Males

A COMPARISON OF ONE-YEAR PLANS AND ELEVEN-YEAR CAREER CHOICE

1-Year Plans		11-Year Career Choice
Mathematician (N = 85) 54 out of pool	→	3 M 1 PS 0 B 5 E 7 MT 1 ST 1 OST 13 CT 31
Physical Scientist (N = 249) 156 out of pool	→	2 M 40 PS 2 B 22 E 1 MT 1 ST 3 OST 22 CT 93
Biologist (N = 33) 27 out of pool	→	0 M 0 PS 1 B 0 E 0 MT 0 ST 0 OST 5 CT 6
Engineer (N = 1,103) 738 out of pool	→	2 M 13 PS 0 B 297 E 4 MT 5 ST 5 OST 39 CT 365

Math Teacher (N = 59)
47 out of pool

0 M
0 PS
0 B
1 E
5 MT
0 ST
3 OST
3 CT
12

Science Teacher (N = 33)
22 out of pool

0 M
2 PS
1 B
0 E
0 MT
1 ST
2 OST
5 CT
11

Other Secondary Teacher (N = 264)
204 out of pool

1 M
0 PS
0 B
2 E
2 MT
3 ST
34 OST
18 CT
60

KEY:

M = Mathematician
PS = Physical Scientist
B = Biologist
E = Engineer
ST = Science Teacher
OST = Other Secondary Teacher
CT = College Teacher

TABLE V - 12(M)3
Twelfth Grade Males

A COMPARISON OF FIVE-YEAR CAREER CHOICE AND ELEVEN-YEAR CAREER CHOICE

5-Year Career Choice		11-Year Career Choice
Mathematician (N = 36) 20 out of pool	→	7 M 0 PS 0 B 4 E 1 MT 0 ST 0 OST 4 CT 16
Physical Scientist (N = 150) 68 out of pool	→	0 M 56 PS 1 B 14 E 0 MT 0 ST 1 OST 10 CT 82
Biologist (N = 26) 18 out of pool	→	0 M 0 PS 5 B 1 E 0 MT 1 ST 0 OST 1 CT 8
Engineer (N = 641) 310 out of pool	→	1 M 3 PS 0 B 301 E 3 MT 0 ST 0 OST 23 CT 331

Math Teacher (N = 54) 29 out of pool	→	1 M 0 PS 0 B 1 E 12 MT 0 ST 6 OST 5 CT 25
Science Teacher (N = 34) 17 out of pool	→	0 M 1 PS 2 B 1 E 2 MT 6 ST 3 OST 2 CT 17
Other Secondary Teacher (N = 250) 188 out of pool	→	0 M 0 PS 0 B 1 E 3 MT 1 ST 46 OST 11 CT 62

KEY:

M = Mathematician
PS = Physical Scientist
B = Biologist
E = Engineer
MT = Math Teacher
ST = Science Teacher
OST = Other Secondary Teacher
CT = College Teacher

TABLE V - 9(F)1
Ninth Grade Females

A COMPARISON OF HIGH SCHOOL CAREER PLANS AND FIVE-YEAR CAREER CHOICE

High School Plans		5-Year Career Choice
Scientist (N = 669) 652 out of pool	→	11 S 1 ET 5 MT 0 ST 17
Elementary Teacher (N = 217) 189 out of pool	→	3 S 13 ET 8 MT 4 ST 28
Other Secondary Teacher (N = 143)	→	4 S 5 ET 4 MT 1 ST 14

KEY:

S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher

TABLE V - 9(F)?
Ninth Grade Females

A COMPARISON OF ONE-YEAR PLANS AND FIVE-YEAR CAREER CHOICE

1-Year Plans		5-Year Career Choice
Scientist (N = 154) 134 out of pool	——→	16 S 0 ET 2 MT 2 ST 20
Elementary Teacher (N = 1,163) 961 out of pool	——→	0 S 200 ET 1 MT 1 ST 202
Math Teacher (N = 153) 123 out of pool	——→	3 S 7 ET 19 MT 1 ST 30
Science Teacher (N = 82) 74 out of pool	——→	0 S 7 ET 0 MT 1 ST 8

KEY:

S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher

TABLE V - 10(F)1
Tenth Grade Females

A COMPARISON OF HIGH SCHOOL CAREER PLANS AND FIVE-YEAR CAREER CHOICE

High School Plans	5-Year Career Choice
Scientist (N = 718) 665 out of pool →	23 S 19 ET 4 MT 7 ST 53
Elementary Teacher (N = 1,872) 1,684 out of pool →	6 S 170 ET 6 MT 6 ST 188
Other Secondary Teacher (N = 1,339) 1,238 out of pool →	3 S 73 ET 16 MT 9 ST 101

KEY:

S = Sc ientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher

TABLE V - 10(F)2
Tenth Grade Females

A COMPARISON OF ONE-YEAR PLANS AND FIVE-YEAR CAREER CHOICE

1-Year Plans		5-Year Career Choice
Scientist (N = 156) 122 out of pool	→	30 S 1 ET 1 MT 2 ST 34
Elementary Teacher (N = 1,243) 965 out of pool	→	0 S 278 ET 0 MT 0 ST 278
Math Teacher (N = 160) 125 out of pool	→	1 S 6 ET 27 MT 1 ST 35
Science Teacher (N = 94) 74 out of pool	→	4 S 2 ET 1 MT 13 ST 20

KEY:

S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher

TABLE V - 11(F)1
Eleventh Grade Females

A COMPARISON OF HIGH SCHOOL CAREER PLANS AND FIVE-YEAR CAREER CHOICE

High School Plans		5-Year Career Choice
Scientist (N = 631) 564 out of pool	→	26 S 23 ET 9 MT 9 ST 67
Elementary Teacher (N = 1,844) 1,549 out of pool	→	2 S 286 ET 2 MT 5 ST 295
Other Secondary Teacher (N = 1,540) 1,384 out of pool	→	12 S 112 ET 21 MT 11 ST 156

KEY:

S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher

TABLE V - 11(F)2
Eleventh Grade Females

A COMPARISON OF ONE-YEAR PLANS AND FIVE-YEAR CAREER CHOICE

1-Year Plans		5-Year Career Choice
Scientist (N = 152) 114 out of pool	→	27 S 3 ET 3 MT 5 ST 38
Elementary Teacher (N = 1,170) 823 out of pool	→	0 S 346 ET 0 MT 1 ST 347
Math Teacher (N = 155) 117 out of pool	→	5 S 11 ET 22 MT 0 ST 38
Science Teacher (N = 69) 53 out of pool	→	2 S 0 ET 1 MT 13 ST 16

KEY:

S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher

TABLE V - 12(F)1
Twelfth Grade Females

A COMPARISON OF HIGH SCHOOL CAREER PLANS AND ELEVEN-YEAR CARTER CHOICE

High School Plans		11-Year Career Choice
Scientist (N = 334) 292 out of pool	→	14 S 6 ET 2 MT 3 ST 17 CT 42
Elementary Teacher (N = 1,422) 1,252 out of pool	→	1 S 156 ET 1 MT 1 ST 11 CT 170
Other Secondary Teacher (N = 1,225) 1,101 out of pool	→	3 S 64 ET 21 MT 7 ST 29 CT 124

KEY:

S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher
CT = College Teacher

TABLE V - 12(F)2
Twelfth Grade Females

A COMPARISON OF ONE-YEAR PLANS AND ELEVEN-YEAR CAREER CHOICE

1-Year Plans		11-Year Career Choice
Scientist (N = 106) 82 out of pool	→	13 S 2 ET 2 MT 2 ST 5 CT 14
Elementary Teacher (N = 617) 499 out of pool	→	0 S 114 ET 0 MT 0 ST 3 CT 118
Math Teacher (N = 84) 61 out of pool	→	1 S 3 ET 15 MT 1 ST 3 CT 23
Science Teacher (N = 41) 34 out of pool	→	1 S 1 ET 0 MT 3 ST 2 CT 7

KEY:

S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher
CT = College Teacher

TABLE V - 12(F)3
Twelfth Grade Females

A COMPARISON OF FIVE-YEAR CAREER CHOICE AND ELEVEN-YEAR CAREER CHOICE

5-Year Career Choice		11-Year Career Choice
Scientist (N = 46) 32 out of pool	→	11 S 0 ET 0 MT 1 ST 2 CT 14
Elementary Teacher (N = 376) 272 out of pool	→	0 S 101 ET 0 MT 0 ST 3 CT 104
Math Teacher (N = 52) 32 out of pool	→	0 S 0 ET 18 MT 0 ST 2 CT 20
Science Teacher (N = 29) 24 out of pool	→	1 S 1 ET 0 MT 3 ST 0 CT 5

KEY:

S = Scientist
ET = Elementary Teacher
MT = Math Teacher
ST = Science Teacher
CT = College Teacher